Design Preferences and Trade-Offs for Moderately Priced Housing in Alberta

Reference Manual	Single-Detached Units	Semi-Detached Units	Townhouse Units

November 1983
ISBN 0-88654-043-7

Alberta
DEPARTMENT OF HOUSING

86-04585/

Preface

This reference manual is intended to assist the home builder and others who are involved in the design, production, marketing and financing of moderately priced housing in Alberta.

It is a summary of a comprehensive report on consumer preferences and trade-offs in the design of moderately priced housing in Calgary and Edmonton entitled **The Study of Design Preferences and Trade-Offs for Moderately Priced Housing in Alberta**. The study was funded by the Alberta Department of Housing and completed in February 1983. The work was technical and used surveys and various analytical methods to determine and analyze consumer preferences, and identify and evaluate possible trade-offs.

The challenge in preparing this summary has been to interpret the results of the work in a format that may be both readily understandable and easy to use. In organizing this manual, we have tried to help the reader to find those portions of greatest relevance quickly.

There is always the possibility that people may say one thing in a survey, but do another in the marketplace. Builders who choose to apply portions of the manual should still be guided by local market conditions.

This manual may help you confirm some things that you have suspected but never applied, and give you new insights into housing markets and the consumers of your particular product.

Contents

4 **Introduction**

5 **Approach to the Study**

7 **Organization of the Manual**

8 **Limitations of the Manual**

10 **Single-Detached Units**

11 Buyer Types

12 Common Preferences

14 Preferences and Trade-Offs by Buyer Type

30 Cost Saving Trade-Offs

30 Design Implications

32 **Semi-Detached Units**

33 Buyer Types

33 Preferences and Trade-Offs

35 Cost Saving Trade-Offs

35 Design Implications

36 **Townhouse Units**

37 Buyer Types

38 Common Preferences

40 Preferences and Trade-Offs by Buyer Types

48 Cost-Saving Trade-Offs

48 Design Implications

50 **Acknowledgements**

Introduction

A major trend in recent years in the production of moderate and lower priced housing has been the reduction of capital input by providing things such as narrower lots, reduced unit sizes, increased densities, and the use of less expensive material. These reductions have been promoted, in Alberta at least, by a number of factors:

- High interest rates and the generally adverse economic conditions of the early 1980s have substantially reduced the purchasing power of new home buyers.
- High serviced land costs have forced builders to construct smaller houses on smaller lots in order to maintain affordable prices.
- The market for first-time buyers of lower priced housing has been dominated in Alberta since 1979 by the Alberta Home Mortgage Corporation (AHMC) subsidy programs. Houses built under these programs are governed by AHMC's lending guidelines.

This recent trend of providing less product in order to keep costs in line represents, to a large degree, a reversal of trends in the 1970s.

It was in this context that Alberta Housing and Public Works (now the Alberta Department of Housing), hired Strategic Development Services Limited in May 1982 to conduct the study of moderately priced housing. The purpose of the study was to investigate **design preferences and trade-offs for typical, moderately priced single-detached, semi-detached and row houses** in the new suburban homeownership markets in Calgary and Edmonton. The examination of design trade-offs was to be largely limited to those dealing with the housing unit and its lot, or in the case of row housing, the unit and its site. The study was completed in February 1983 and the final report is called "The Study of Design Preferences and Trade-Offs for Moderately Priced Housing in Alberta."

The major objectives of the study were as follows:

- the identification of features which new housing should contain to ensure a high standard of livability and value;
- the identification of design trade-offs which will result in improved livability at constant cost or which will maintain livability at reduced cost; and
- the identification of constraints on housing design and production which prevent the construction of preferred housing designs.

Approach to the Study

If one considers questions of housing design, it becomes clear that the existence of building codes, regulations and current industry practices generally ensure that more than the minimal requirements for structural soundness, safety and welfare in new housing are met. An approach which tried to identify all features that new housing should contain would therefore produce a lot of redundant information. Instead, the approach taken was to identify particular design aspects of new housing which were not meeting the requirements of home buyers. In other words, questions of housing design and quality were approached by initially identifying design solutions which result in dissatisfaction on the part of at least some home buyers.

Given this approach, the study proceeded through three major stages: analysis of current design solutions which result in unmet design requirements; development of alternative design solutions which attempt to meet these design requirements; and, evaluation of alternative design solutions in terms of consumer acceptability, cost efficiency and production feasibility.

ANALYSIS

Analysis focussed upon the identification of design requirements not being met by new, moderately priced, ground-oriented housing and consisted of three tasks:

- Existing reports and studies were reviewed to identify important considerations of livability and design requirements in housing. Past research on the relationship between housing costs and production, and between costs and livability was also reviewed.
- Group discussions were held with recent and prospective home buyers both in Calgary and Edmonton to explore specific consumer housing design preferences and possible design solutions. Interviews were also held with builders of new homes, planning officials in the two cities, and AHMC personnel in order to identify constraints to cost reductions and/or improved livability.
- The list of design requirements which were not being met were structured into closely connected sets of requirements and grouped in terms of external design requirements, internal design requirements, and construction-related design requirements.

These three categories provided the framework for developing design alternatives and for assessing buyer preferences and design trade-offs.

DEVELOPMENT OF DESIGN ALTERNATIVES

Design alternatives were developed on the basis of the set of unmet design requirements identified in the previous stage. To limit the number of alternatives, only those which generally met known consumer preferences, cost constraints, regulatory constraints and current building practices were included.

Known Buyer Preferences. Design alternatives known to rank low among buyers were excluded.

Cost Constraints. For the purposes of this study, a maximum house price of $80,000 was set as the market constraint in the development of design alternatives. Cost constraints were maintained by including cost-saving trade-offs which could compensate for construction cost increases resulting from some design alternatives.

From discussions with builders and buyers, three major areas were identified where cost reductions could be achieved:

- Cost savings of approximately $215 per square metre ($20 per square foot) could be achieved by decreasing unit area.
- Elimination of such commonly used facade features as window grilles and shutters, boxed windows, chimney chases, etc., could achieve cost savings in the order of $1,000.
- Completion of non-structural internal features such as painting, light fixtures and closet doors, carpeting, floor coverings and overhead kitchen cupboards could, in total, reduce overall costs by as much as $3,000.

Regulatory Constraints. An important objective of this work was to identify areas of conflict between buyer preferences and regulatory requirements, especially where such requirements result in increased costs. Regulatory constraints were viewed with a measure of flexibility and were not used to eliminate viable design alternatives. The major area of conflict appeared to be in the siting of the unit on the lot and this was subject to varying by-law requirements in Calgary and Edmonton.

Current Building Practices. The development of design alternatives fell within the following standard practices in Calgary and Edmonton at the time of the study:

- **Lot dimensions.** Lot sizes for moderately priced new housing tend to range in width from 7.6 to 10.7 metres (25 to 35 feet) and lot depths are typically 30.5 metres (100 feet).
- **Unit dimensions.** Floor areas range from a low of 83 square metres (895 square feet) to a maximum of 121 square metres (1,300 square feet). Unit widths are typically 6.1 to 7.6 metres (20 to 25 feet).
- **Unit style.** Four basic units are produced in the two housing markets; bungalow, bi-level, split-level and two-storey.
- **Materials and methods.** Wood frame construction with a full, poured concrete basement is most common. Stucco, aluminum or vinyl siding are the most commonly used exterior cladding materials.

On the basis of these practices, the following design parameters were adopted for the development of design alternatives:

For Single and Semi-Detached Units

- Lot dimensions of 9.1 by 30.5 metres (30 feet by 100 feet).
- A maximum developed area of 102 square metres (1,100 square feet).
- Open parking with one parking space per lot.

For Townhouse Units

- A total project size of 60 units at a minimum density of 42 units per hectare (17 units per acre).
- A maximum developed area of 102 square metres (1,100 square feet).
- Open parking at grade with one parking space per unit.

EVALUATION OF DESIGN ALTERNATIVES

The design alternatives resulting from the previous stage did not differ much from industry practices and generally fell within the range of alternatives available in new housing in Calgary and Edmonton.

The final stage of the study was the evaluation of these design alternatives using the following three methods:

- Surveys of prospective and recent buyers of new, moderately priced, single-detached houses and recent buyers of row and semi-detached houses were carried out in Calgary and Edmonton to evaluate the alternatives in terms of consumer preferences and to identify home buyer segments based on preferences.
- A review with builders was carried out to determine the variances in the costs of constructing particular design alternatives.
- Interviews with officials in the Building Standards Branch of the Alberta Department of Labour, the Design and Construction Branch of Alberta Home Mortgage Corporation and the Land Use Control Section of the City of Edmonton's Planning Department were carried out to assess the feasibility of relaxing regulations which restrict designs preferred by consumers.

Housing included in the survey of recent buyers was typical of moderately priced housing; i.e., under $85,000 and around 102 to 112 square metres of developed area, situated on a narrow lot in the 9 meter (30 feet) range. In total, about 50% of the households surveyed completed and returned the questionnaire: 388 responses were received from single-detached buyers; 43 from semi-detached buyers; and, 153 from townhouse buyers.

In evaluating consumer preferences, it was assumed that if a consumer preferred one alternative over another, the preferred alternative was perceived as increasing livability and had greater value in meeting the consumer's design requirements. Because of cost limitations set out in the study, buyer preferences were normally associated with trade-offs, i.e., "What would you give up or trade-off in order to get more of something else?" In all cases, when examining preferences, it must be remembered that one is dealing with degrees of preference rather than absolutes.

Information obtained from these three tasks resulted in the development of alternative designs which improve livability at constant cost and/or reduce costs without affecting livability for specific new home buyer segments or markets.

Organization of the Manual

This Reference Manual is organized according to the three housing types: the single-family dwelling, the semi-detached dwelling and the townhouse unit. Each section follows a common format. It begins with a discussion of the specific buyer types and their distinguishing features followed by a description of those design preferences and trade-offs that contribute to increased livability. Preferences common to all buyer types are discussed first, followed by preferences and trade-offs that distinguish particular buyer types. In each case, the information is organized in terms of external design requirements, internal design requirements and construction-related requirements. Cost saving trade-offs are discussed by housing type and each section concludes with a summary of the design implications of the preferences and trade-offs.

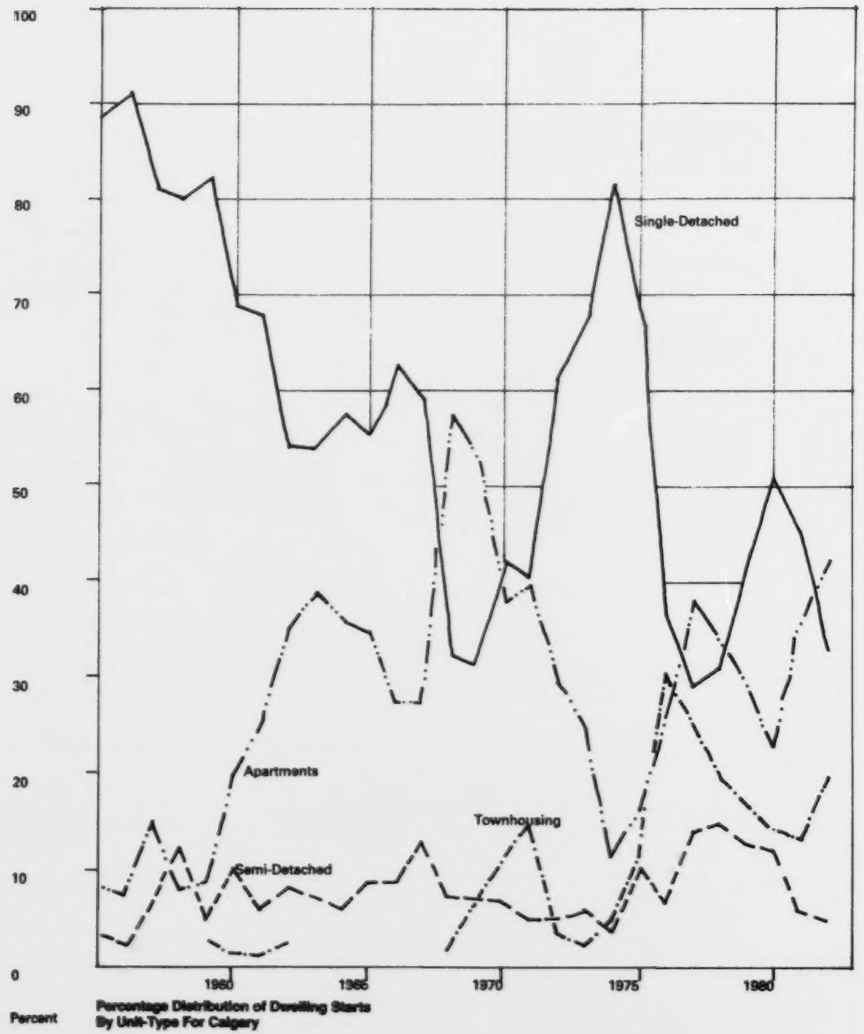
Photographs and drawings have been selected to illustrate the text. This material was created for this particular publication and was not used in discussions, surveys or other contact with the various respondents who participated in the study.

Limitations of the Manual

The study was limited to an investigation of design trade-offs in single-detached, semi-detached and townhouse units typical of what was being produced for the new homeownership markets in Calgary and Edmonton.

Changing Market Conditions

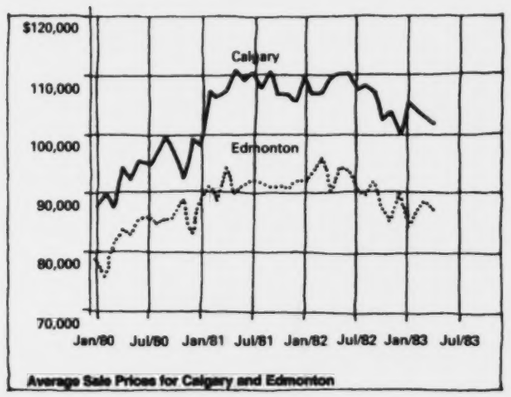
While it is doubtful that household characteristics will undergo significant change in the near future, it is conceivable that unit characteristics could undergo change in direct response to market conditions. Lot width and lot size are already increasing as a result of the reduced sales of serviced lots, and maximum developed area in the unit is increasing due to increased competition. Moreover, $80,000 signified a moderately priced home in 1982, but that figure is now significantly less. These market changes could result in increased livability because of the increased purchasing power of the buyer without need for significant trade-offs. In other words, the relationship between supply and demand has a major impact on what purchasers receive for their investment and market conditions may either increase or decrease the importance of design trade-offs.



Percentage Distribution of Dwelling Starts By Unit-Type For Calgary

Cost Saving in Other Areas

When it comes to reducing cost, it must be recognized that perhaps the major advances to be made in cost reductions are outside the design of the unit itself. A reduction in interest rates has the most significant effect on overall housing costs. Subdivision costs certainly affect the price of the lot and cost reductions in this area could likely be achieved without necessarily affecting livability of the unit. There are a number of valid cost reduction alternatives that fall outside the scope of this study.



Average Sale Prices for Calgary and Edmonton

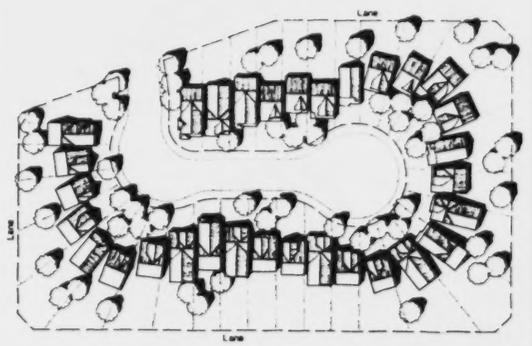
Methodological Limitations

It must be remembered that the findings of this study have been derived from a number of sources, including a review of relevant studies, interviews, discussion groups and actual surveys. The evaluation of buyer preferences for unit features and trade-offs among those features was based on the results of the surveys. Survey work has limitations, and the findings presented here should be approached with some caution and be considered in light of the reader's own experience in housing markets.

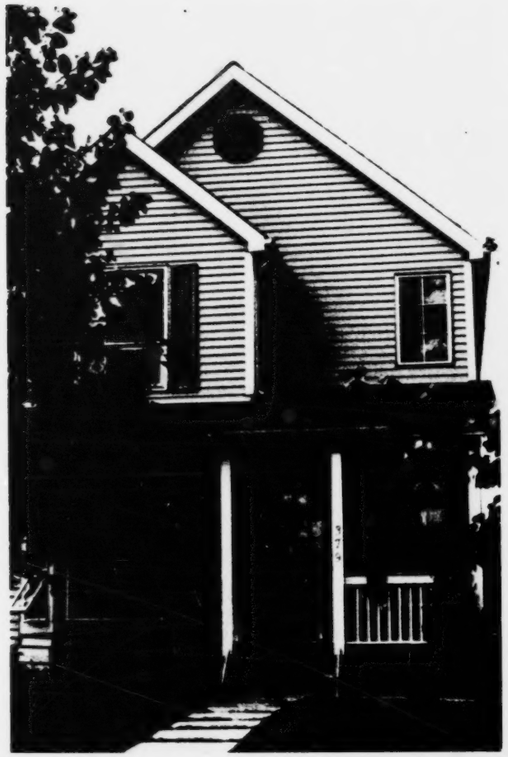
The study was specific to the Calgary and Edmonton markets and one should be cautious in generalizing the results to different markets. Both of these markets have been characterized in past years by relatively high land costs and an unusually large presence of government subsidy programs for first-time home buyers. The applicability of these results to other market areas is therefore limited.

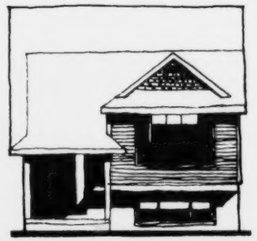
Location

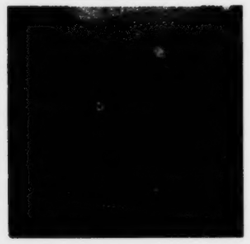
The study has not addressed neighborhood location as one of the possible trade-offs. This does not mean that location is not important or that consumers do not trade it for other things. Rather, a typical new suburb in Calgary or Edmonton was the assumed location throughout the study in order to focus on design preferences and trade-offs in the dwelling unit and lot.



Single-Detached Units







11 Buyer Types

12 Common Preferences

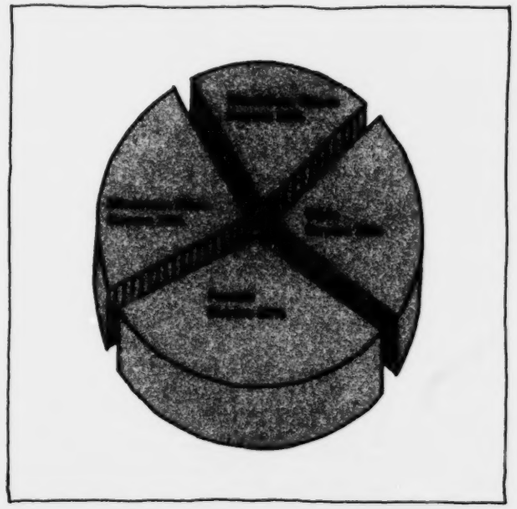
14 Preferences and Trade-Offs by Buyer Type

30 Cost Saving Trade-Offs

30 Design Implications

Single-Detached Units

Buyer Types



The analysis and evaluation of buyer preferences, in terms of the design alternatives presented to them, identified four buyer types for single family detached units. These buyer types are defined on the basis of differences in preference for certain unit attributes.

Maximum Space Buyers

Twenty percent of single family house buyers were identified as Maximum Space Buyers. The distinguishing characteristic of prospective and recent buyers classified as belonging to this group is the high preference for or value placed on total unit size. Cost saving trade-offs involving reduced unit size are not possible with these buyers.

Households which were classified as Maximum Space Buyers were typically young married couples about half of which had one or two children. Most owned their own home, and about 20% of the prospective buyers included in this group were looking for their second or third home. The average household income was $32,000 and the average age of the respondents was 29.

Facade Buyers

For 32% of single-detached house buyers a decorative or fancy facade is very important. Facade treatment is so important to this buyer type that unit area, style and even number of bedrooms would be traded for a preferred facade treatment.

This group differed from the other groups mainly in its slightly higher proportion of prospective buyers. The average household income was $36,000 and the average respondent age was 28.

Style Buyers

Given that the house is situated on a narrow lot, most buyer types prefer a split-level style. This preference is especially pronounced in Style Buyers, which comprise 23% of single detached house buyers. The preference for a split-level style tends to exceed preferences for most other unit attributes.

Style Buyer households were very similar in household characteristics to Maximum Space Buyers. Most were young married couples, 58% of whom had no children. The average household income was slightly higher than for the Maximum Space Buyers ($36,000), and there were more two income households (61% vs. 55%).

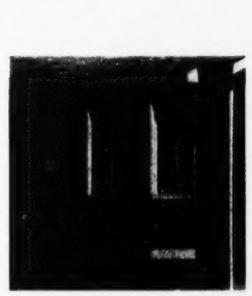
Minimum Price Buyers

Buyers in this group differ from other buyers primarily in the value placed on cost savings resulting from reduced unit area. A smaller unit size is preferred if cost savings can be realized. Twenty-five percent of single family house buyers fall into this category.

Households in this buyer group tend to be slightly more likely to own their present home than households in the other groups. Aside from this, however, differences in household characteristics are relatively minimal. Household income is slightly lower ($31,000) even though the proportion of two income households is similar to the other groups.

Common Preferences

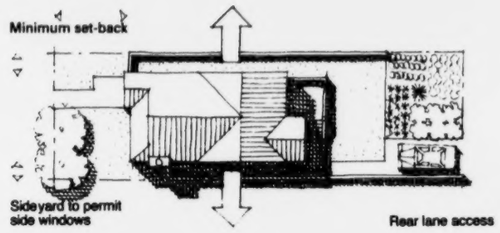
Although some major differences do exist between buyer types, buyer preference and presumably livability, can be enhanced in a similar manner for most single-detached buyer types.

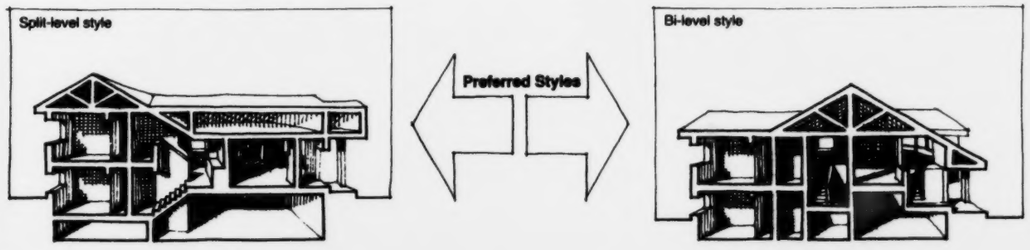


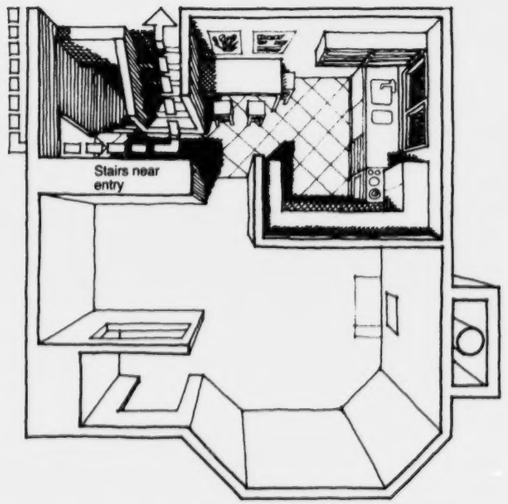
External Design Attributes

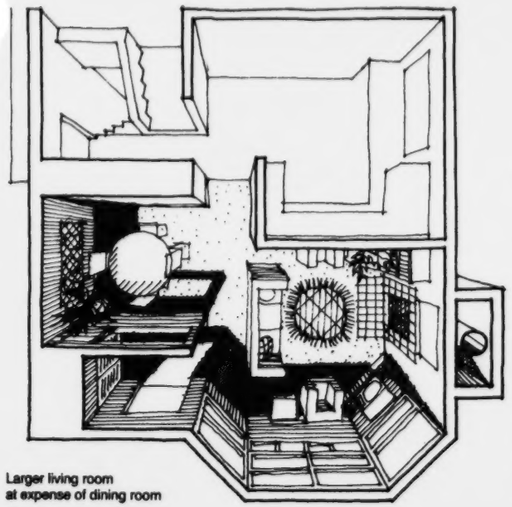
Buyer dissatisfaction with design aspects external to the unit are most commonly related to external appearance, circulation, space allocation, and natural lighting. Buyer satisfaction in these areas can be enhanced for most buyer types by:

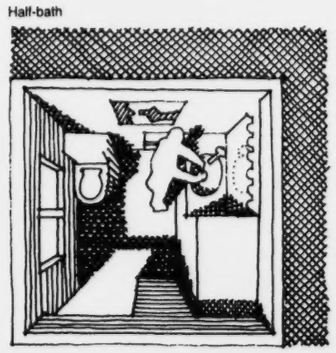
- using split-level or bi-level styles with decorative facades emphasizing such structural features as chimney chases, boxed or bowed windows, and variations in roof elevations;
- minimizing front yard set-back to increase backyard space;
- providing rear lane access to parking; and
- providing sufficient side yard space to allow windows to be located on all sides of the unit.











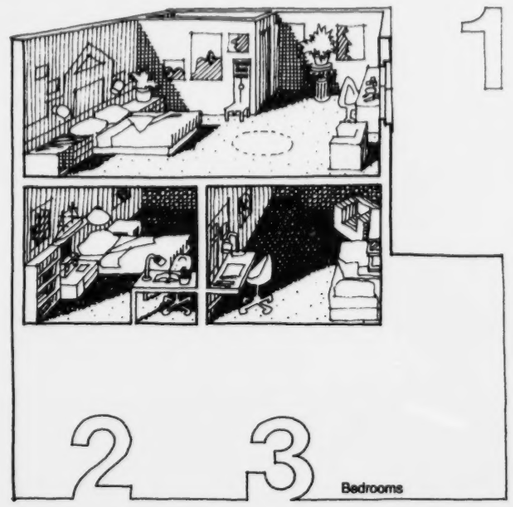
Internal Design Attributes

Buyer dissatisfaction associated with aspects of internal design are mostly concerned with circulation, space allocation, and kitchen design and layout. Attributes which increase buyer preferences are also fairly consistent across buyer types. Livability can be most enhanced by providing the following:

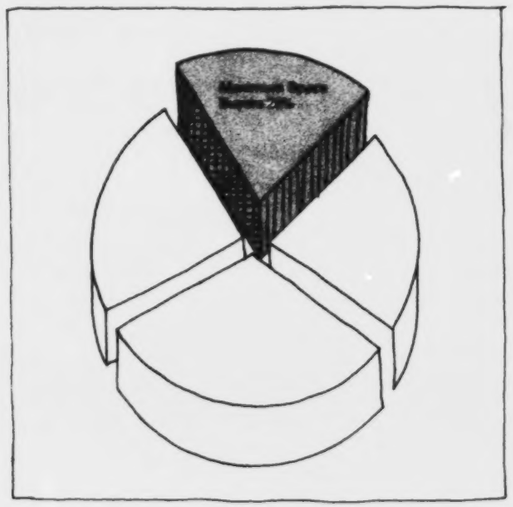
- three bedrooms;
- one-and-one-half baths with the half bath located near the second entry;
- a U-shaped kitchen counter layout with a window in the kitchen work area and sufficient space for an eating area in the kitchen;
- a larger living room at the expense of dining area; and
- stairways located near entries to the unit.

Construction-Related Attributes

Quality of construction and workmanship are extremely important to single-detached buyers. Cost savings which can be applied to improving construction quality (or reducing unit price) can be realized through buyer completion of non-structural aspects of the unit. Aside from preferring to pay extra for upgraded insulation, most buyers, however, do not prefer to make trade-offs involving buyer completion of painting, flooring, lighting fixtures, closet doors, or kitchen storage space. Only Minimum Price Buyers are relatively indifferent to trading off buyer completion of light fixtures and closet doors for cost savings.



Maximum Space Buyers Preferences and Trade-Offs



Trade-Offs in External Design Attributes

A distinguishing characteristic of Maximum Space Buyers is their unwillingness to compromise total unit area in exchange for saving on the total unit price. Some would trade a fancy facade for less unit area, but overall, area has a much greater importance than facade treatment.

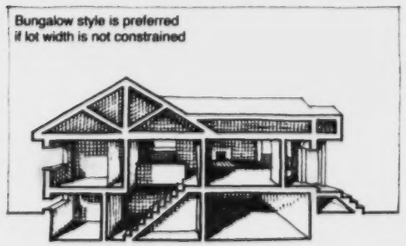
Although most external design attributes are rated as being at least fairly important to the Maximum Space Buyer, three attributes tend to be the most important both in terms of buyer preferences and design constraints placed on other attributes.

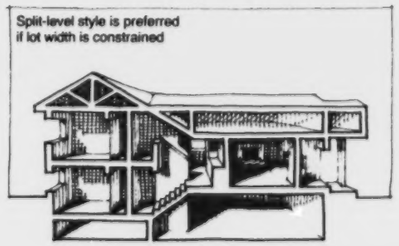
Unit Area. Few, if any, Maximum Space Buyers are willing to make trade-offs which result in a smaller sized unit. Cost savings on the total unit price of $215 per square meter are insufficient to compensate Maximum Space Buyers for reduced unit size. Only in two areas are some size reductions acceptable. Two-storey unit style is sufficiently unpopular that buyers in this group would prefer a split-level, even if it had 9 square metres less unit area. A decorative facade treatment would also be traded for 9.29 square metres (100 square feet) by some Maximum Space Buyers. A reduction of unit area by 18.58 square metres (200 square feet) for a saving of $4,000 cannot be compensated for in terms of other external design attributes.

Unit Style. Where lot dimensions are not a constraint, many buyers in this group (43%) prefer a bungalow style. However, where the lot width is constrained to 9.14 metres (30 feet), a split-level unit is most preferred. A bi-level style on a narrow lot is also relatively acceptable, whereas two-storey units and bungalows on lots of this width are less acceptable to Maximum Space Buyers. More unit area (18.58 square metres (200 square feet) in the case of a two-storey unit) would be required to compensate for the use of these two unit styles.

Window Location. Having windows on all four sides of the unit is much preferred by buyers in this group. In order that windows can be located on the side, building code requirements and land-use by-laws require increased separation spaces between adjacent units. Such requirements result in a narrower unit on a 9.14 metre lot. A narrower unit is less preferred by Maximum Space Buyers, although this reduced preference is offset by having side windows.

Preferred Styles Depend on Lot Width





Other external design attributes tend to be of less importance to Maximum Space Buyers, and are to some extent constrained by the high preference associated with unit style, area and window location.

Unit Shape. Maximum Space Buyers prefer a rectangular shaped unit to an L-shaped unit having 9.29 square metres less area to compensate for increased construction costs, despite the L-shape having greater potential for variation in unit appearance and more flexibility in parking arrangements.

Parking Location. Lane access to backyard parking was generally preferred to front yard parking by buyers in this group. Given a wider lot which would not restrict window locations or unit width, Maximum Space Buyers would likely prefer a side drive to rear lane access.

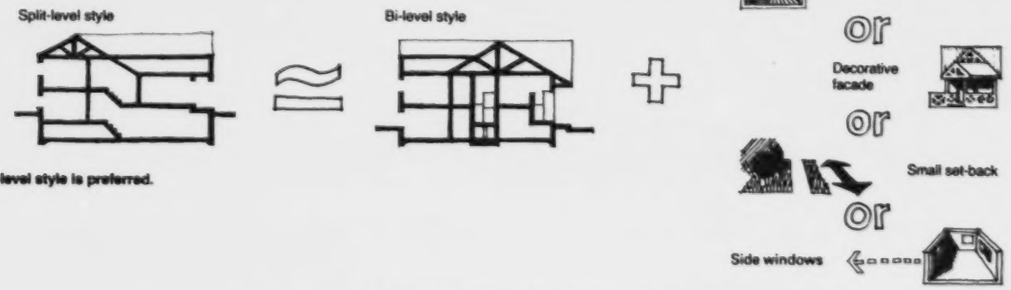
Facade Treatment. Structural facade treatments such as a chimney chase, boxed windows, and variations in roof elevations are fairly important to Maximum Space Buyers. Decorative features such as window grills and shutters are of less importance. Facade appearance in general seems to be less important to Maximum Space Buyers than to buyers of other groups. A decorative facade can generally be traded for a 9.29 square metre reduction in unit area; however, a plain facade would be preferred over a greater reduction in unit area.

Front Yard Set-Back. For a given unit style, less front yard set-back will result in more backyard area. This trade-off is of only minor significance to Maximum Space Buyers. A 4.6 metre (15 feet) set-back is preferred by these buyers to a 7.6 metre (25 feet) set-back, but is of less importance than most other unit attributes.

Entry Locations. Space buyers tend to prefer both entries to be located on the sides of the unit, although most buyers are relatively indifferent to whether the main entry is located on the side or front.

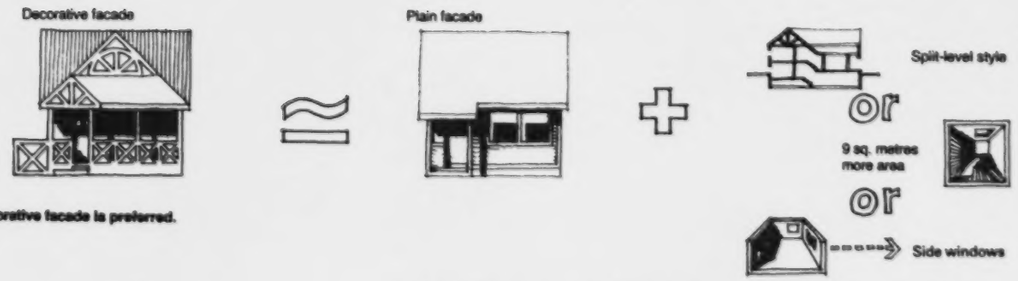
Unit Width. A 7.6 metre unit is preferred over a 6.1 metre (20 feet) unit; however, having side windows makes the 6.1 metre unit preferable overall when situated on a narrow lot.

Examples of Design Trade-Offs



A split-level style is preferred.

Diminished preference for a bi-level style can be compensated for by inclusion of any of the above features if they are not provided in the split-level dwelling.



A decorative facade is preferred.

Diminished preference for a plain facade can be compensated for by inclusion of any of the above features if they are not provided in the dwelling with the decorative facade.

Maximum Space Buyers Preferences and Trade-Offs

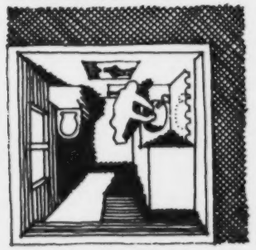
Trade-offs in Internal Design Attributes

Design attributes related to internal space allocation, room size and layout tend to be quite important to Maximum Space Buyers. In particular, three internal unit attributes are most preferred.

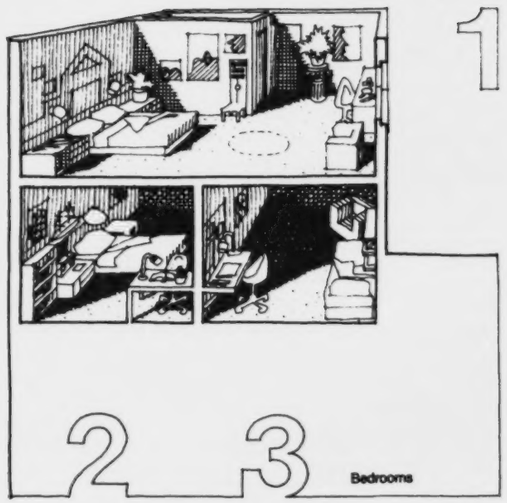
Half-Bath. The perceived value of a half-bath is such among Maximum Space Buyers that few, if any, are willing to forego a half-bath on the main floor for a $1500 saving. Ninety percent of these buyers would want a half-bath in the next new unit they purchase. The absence of a half-bath cannot be compensated for by any other unit attribute.

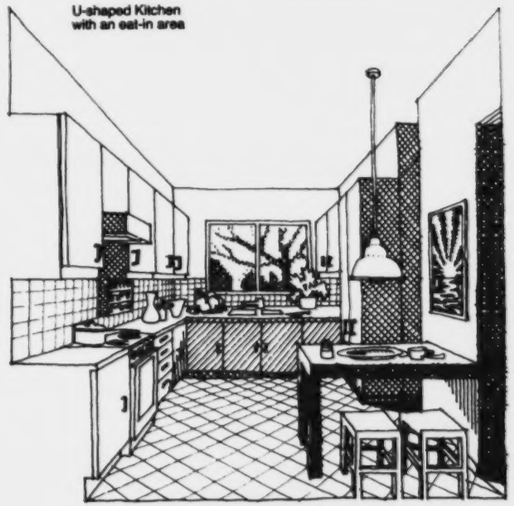
Number of Bedrooms. A large master bedroom and two smaller secondary bedrooms are preferred by Maximum Space Buyers over only two large bedrooms. About 20% of buyers in this group would even prefer four bedrooms in their next home.

Kitchen Layout. Maximum Space Buyers prefer U-shaped kitchen layouts to L-shaped layouts, and the latter to "in-line" layouts. Kitchen space should be large enough to allow meals to be eaten in the kitchen. Lack of such space in the kitchen is difficult to compensate with any other attribute. Plain cupboard doors are preferred to styled ones.

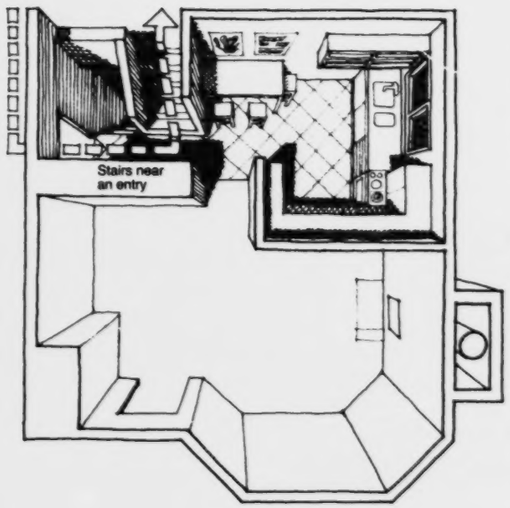


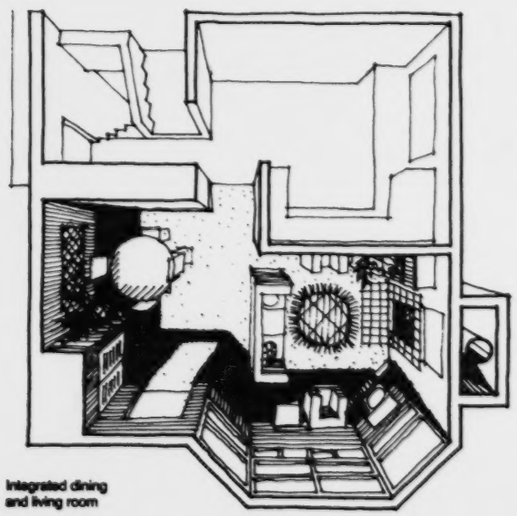
Half-bath





U-shaped Kitchen with an eat-in area





Integrated dining
and living room

Other internal design attributes to be considered are as follows:

Dining Area Location. Maximum Space Buyers prefer the dining area to be integrated with the living room. This provides two choices in eating area, given their preference for an eat-in kitchen. The preference for this arrangement more than offsets the resultant decrease in living room size.

Stairway Location. Stairs which lead to another level should be located near an entry for the Maximum Space Buyer. In split-level style units, this preference may be difficult to realize.

Main Entry Foyer. An entrance hall or foyer is not important to this group. They prefer this area to be given over to living space.

Second Entry. A sliding patio door is often used for second entries. Maximum Space Buyers tend to be relatively indifferent to whether a patio door or hinged door is used.

Although variations in internal design attributes can have a major effect on Maximum Space Buyer preferences, a considerable number of alternatives in internal layout and design are still possible.

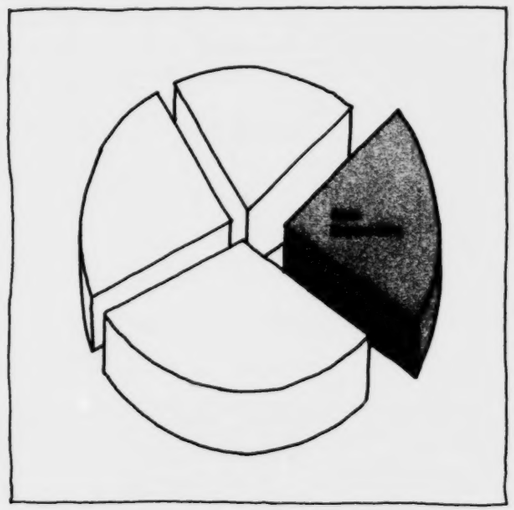
Trade-Offs in Construction-Related Attributes

A completely finished house with upgraded insulation is most preferred by Maximum Space Buyers. The relative importance that construction related attributes have suggests that for Maximum Space Buyers these are the most important of any of the unit attributes examined.

Unfinished aspects of the housing unit, such as unpainted walls, or no floor finishes in trade for cost savings do not appeal to Maximum Space Buyers. Only if faced with a choice between a completed unit without a half-bath and an unfinished unit with a half-bath are buyers in this group somewhat more amenable to completing some non-structural aspects themselves. Space buyers are, however, willing to make some trade-offs for about $1000 worth of upgraded insulation — for example, all linoleum floors in lieu of carpet.

Upgraded insulation
preferred

Style Buyers
Preferences and Trade-Offs

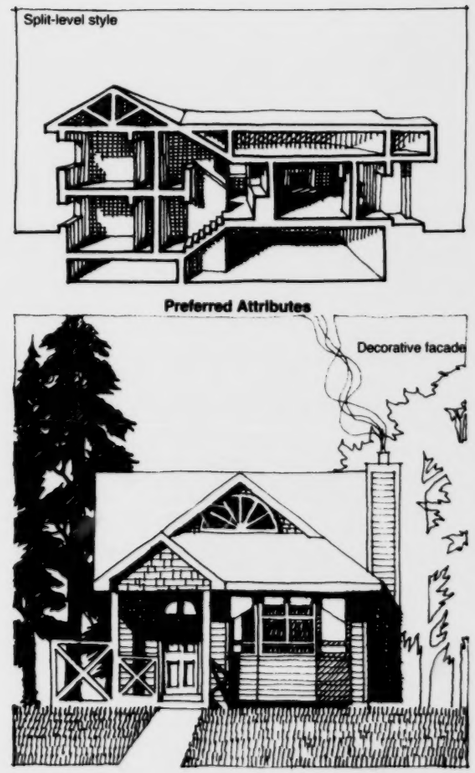


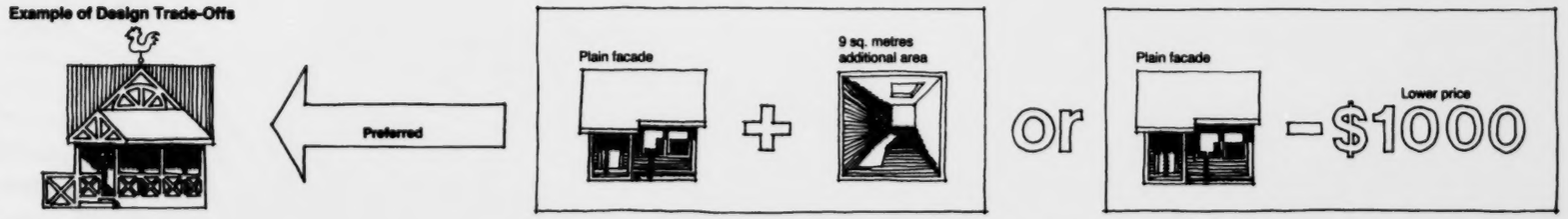
Trade-offs in External Design Attributes

Unit style and external appearance are very important preferences of Style Buyers. Most would prefer a slightly smaller split-level unit with an attractive facade to a larger, plainer unit. For most buyers in this group, unit area is preferred to cost savings on unit price, although this is of lesser importance than other unit attributes. Two unit attributes associated with external design are most important to Style Buyers.

Unit Style. Unit style is more important to the Style Buyer group than to any other group. The majority of buyers in this group (52%) prefer a split-level style irrespective of lot dimensions. The only trade-off that Style Buyers would make for unit style is a decorative facade, i.e., a bi-level or bungalow with a fancy facade being preferred to a split-level with a plain facade. No external design feature, however, would be sufficient compensation for a two-storey style.

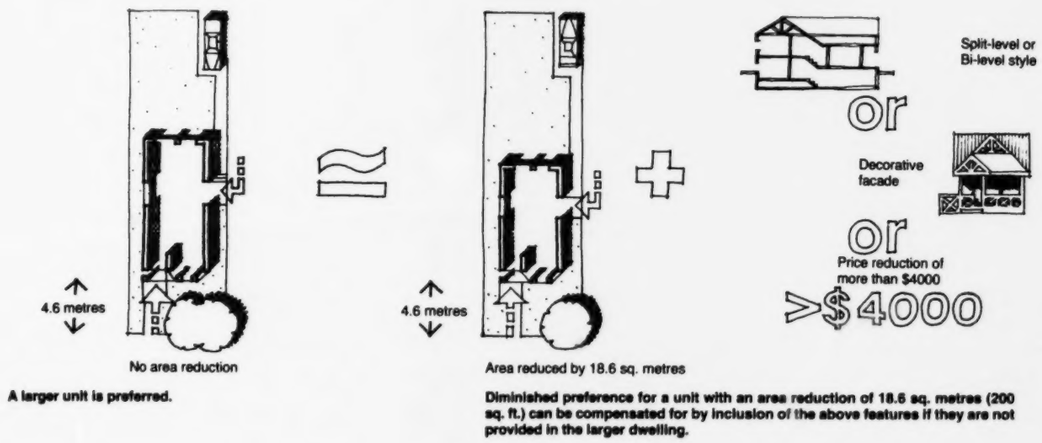
Facade Treatment. A decorative facade treatment is also very important to Style Buyers. Most buyers in this group would prefer a smaller unit (9 square metres less) with a fancy facade to a unit with a plain facade and a lower price ($1000 less), unless the fancy facade is on a two-storey unit.





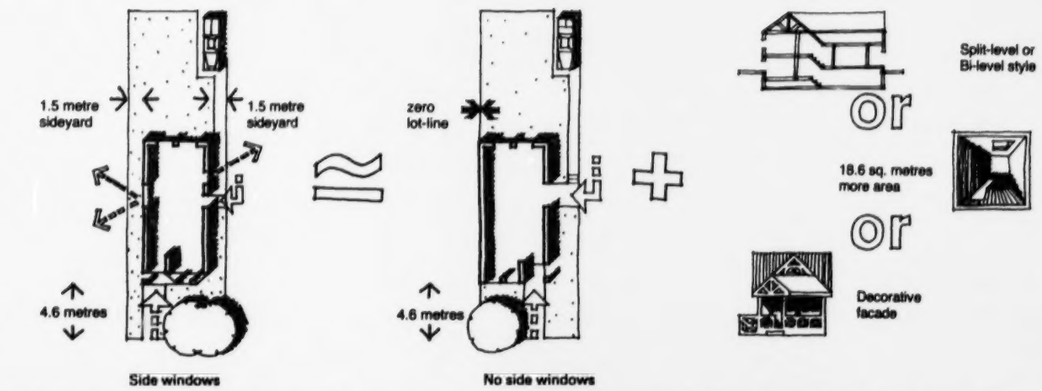
A smaller unit with a decorative facade is preferred over a unit with a plain facade, even if it has a larger area or a lower price.

Examples of Design Trade-Offs



A larger unit is preferred.

Diminished preference for a unit with an area reduction of 18.6 sq. metres (200 sq. ft.) can be compensated for by inclusion of the above features if they are not provided in the larger dwelling.



A unit with windows on all four sides is preferred.

Diminished preference for a unit with no side windows can be compensated for by inclusion of the above features if they are not provided in the dwelling with windows on all four sides.

In comparison to unit style and facade treatment, other external design attributes, although still important, are relatively less significant to Style Buyers.

Front Yard Set-back. A small 4.6 metre front yard and larger backyard area is preferred by Style Buyers. Only unit style, excepting a two-storey style, and decorative facade can compensate for a 7.6 metre front yard and smaller backyard.

Parking Location. Style Buyers tend to prefer rear lane access to parking to other alternatives.

Window Location. Buyers in this group prefer windows on all sides of the unit. Absence of windows looking into a side yard can be compensated for by a small front yard set-back, a split-level style, or a decorative facade.

Unit Area. Trade-offs in unit area are generally not accepable to Style Buyers. However, unlike Space Buyers, Style Buyers will accept a smaller unit and a lower price in order to get a unit other than a two storey, a decorative facade, backyard parking, or a small front set-back.

Unit Shape. A rectangular unit is preferred by buyers of this group to an L-shaped unit with 9.29 square metres less area. Preference for the rectangular shape will, however, be less if style, facade, set-back or window location preferences are not met.

Unit Width. Unit width is not particularly significant to Style Buyers. While most prefer a wider unit, they would accept a narrower unit in order to allow windows to be located on all sides.

Entry Locations. Style Buyers prefer front and back entry locations. However, if this is not possible due to unit style or other constraints, variations in entry locations are quite acceptable.

Style Buyers
Preferences and Trade-Offs

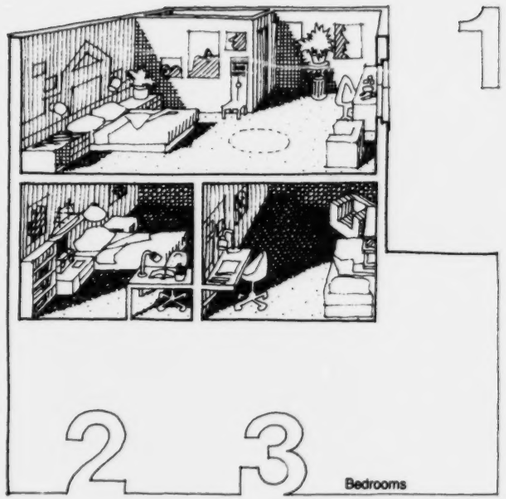
Trade-Offs in Internal Design Attributes

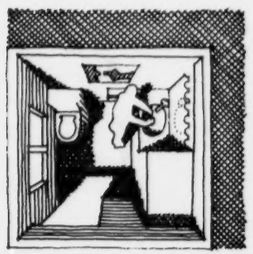
The most important internal design attribute to the Style Buyer group are number of bedrooms, a half-bath on the main floor, and kitchen layout.

Number of Bedrooms. Number of bedrooms is the most important internal unit attribute. Any other internal attribute would be traded to provide three bedrooms — a large master bedroom and two smaller bedrooms.

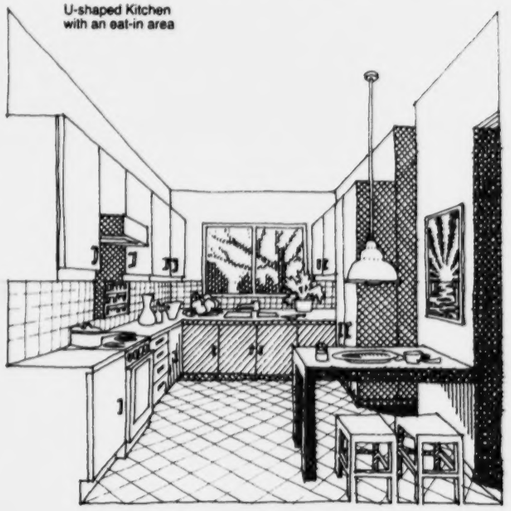
Half-bath. Style Buyers will not trade a $1500 saving for loss of a half-bath on the main floor. Over 90% of these buyers want at least one half-bath in their next home. The only conditions under which they would forego a half-bath would be for a three bedroom unit or their preferred kitchen layout.

Kitchen Layout. A U-shaped kitchen counter layout is most preferred by buyers of this category, with "in-line" and L-shaped layouts being their second and third choices respectively. A combined kitchen/dining area is preferred over a dining/living area combination, although the preference is marginal. However, an eating area should be provided in the kitchen. Styled cupboard doors instead of plain doors are quite important to Style Buyers.




Half-bath

U-shaped Kitchen
with an eat-in area



In comparison to kitchen design and layout, other internal design attributes have relatively less effect on Style Buyer preferences.

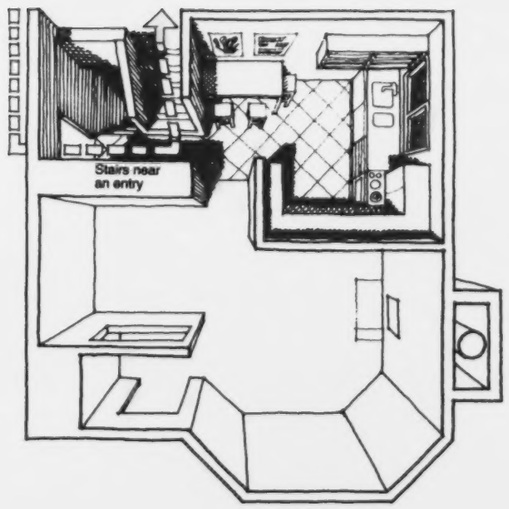
Foyer. A main entry foyer or hall which provides a transition from entry to living room is preferred.

Stair Location. Stairs should be located next to an entry, although this requirement may not always be compatible with style preference.

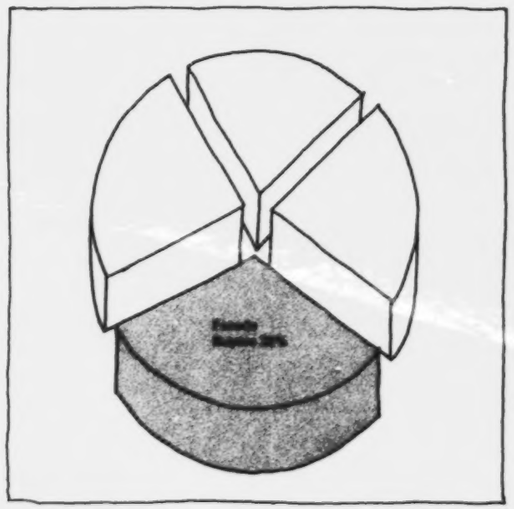
Second Entry Type. A hinged door rather than a patio door is preferred by Style Buyers for the second entry.

Trade-Offs in Construction-Related Attributes

Leaving non-structural attributes for buyer completion in return for cost savings is not acceptable to the Style Buyer group. This is especially true for finished flooring and painting of interior walls. However, upgraded insulation is highly valued by these buyers and a $1000 upgrading of insulation could be traded for buyer completion of some non-structural aspects.



Facade Buyers
Preferences and Trade-Offs



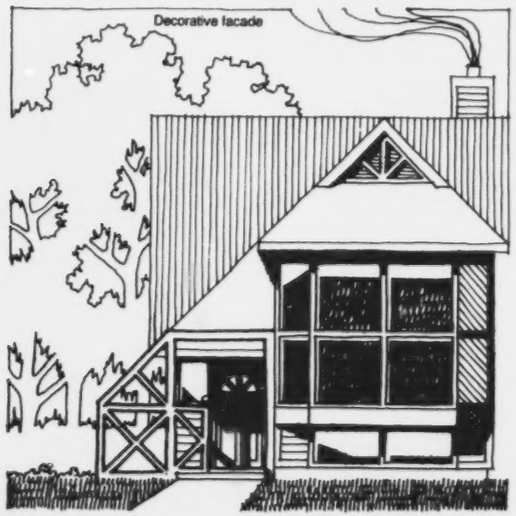
Trade-Offs in External Design Attributes

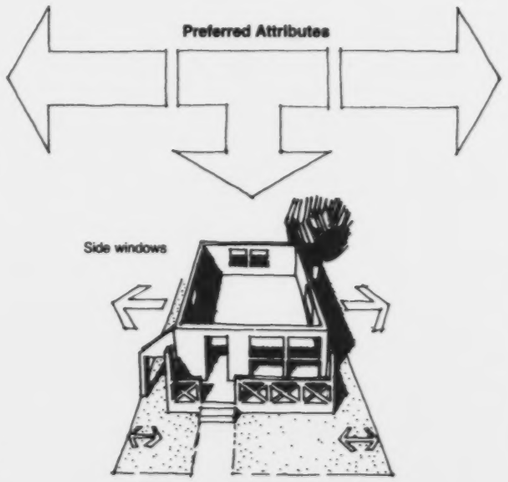
External design attributes tend to be either of major or minor importance to Facade Buyers; few are of moderate importance. Buyers in this group would much prefer to have a more extensive facade treatment in exchange for less unit area. Overall, total unit size is of less importance to these buyers than to Maximum Space or Style Buyers. Reductions in unit area have relatively little effect on preferences if these reductions are compensated for by savings on the unit price or a more complicated unit shape. Unit attributes most important to buyers of this group are:

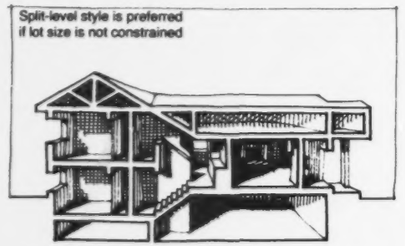
Facade Treatment. A plain facade has such a negative effect on Facade Buyers that they would not trade $1000 cost saving, unit area, or any other external design attribute for a plain facade.

Window Location. A decorative facade is the only trade-off for side windows that would be considered by buyers in this group.

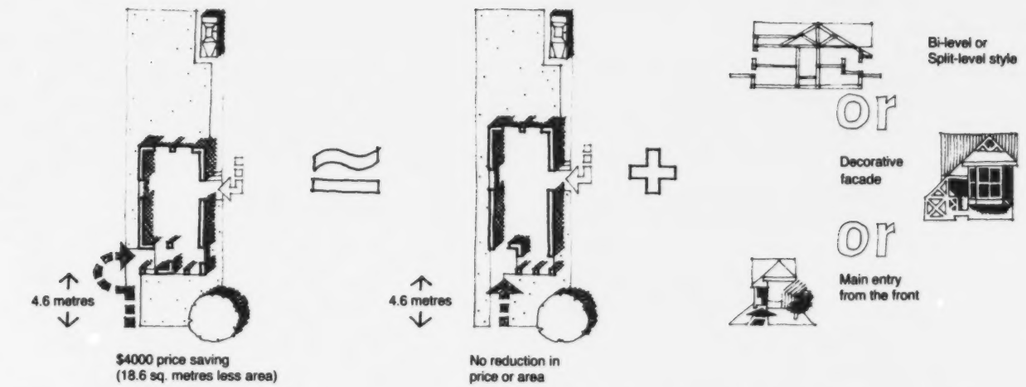
Unit Style. Facade Buyers are more variable in their preference for unit style than are Maximum Space or Style Buyers. If lot size were not a constraint, many Facade Buyers (39%) would prefer a split-level style. Given a 9.14 metre (30 foot) lot width, bi-level style is slightly preferred over split-level style. Two-storey and bungalow styles are not preferred on narrow lots.





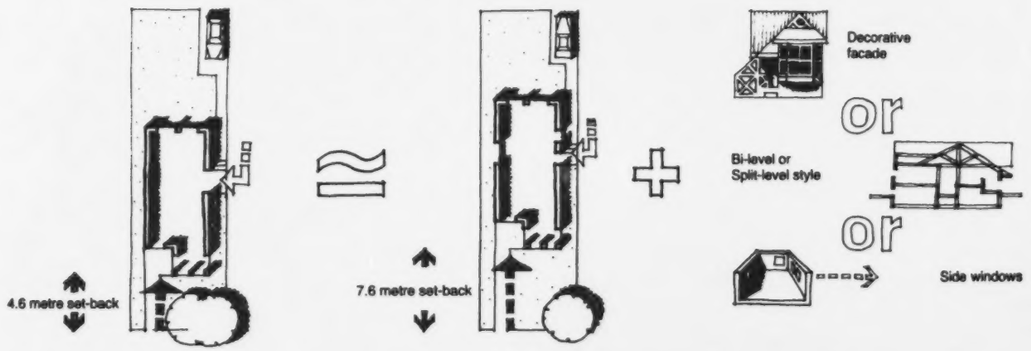


Examples of Design Trade-Offs



A dwelling with a price saving of $4000 is preferred.

Diminished preference for a unit with no price reduction can be compensated for by inclusion of any of the above features if they are not provided in the lower priced dwelling.



A small front set-back is preferred

Diminished preference for a unit with a larger front set-back can be compensated for by inclusion of any of the above features if they are not provided in the dwelling with the smaller set-back.

The only other external design attribute which has a more than slight effect on Facade Buyer preference is parking location. Rear lane access to backyard parking is most preferred; however, most buyers would accept front yard parking if this resulted in getting a split or bi-level unit with a decorative facade and windows on all four sides. Facade Buyers are essentially indifferent to variations in other external design attributes, as they are to trading off unit area for cost savings.

Facade Buyers Preferences and Trade-Offs

Trade-Offs in Internal Design Attributes

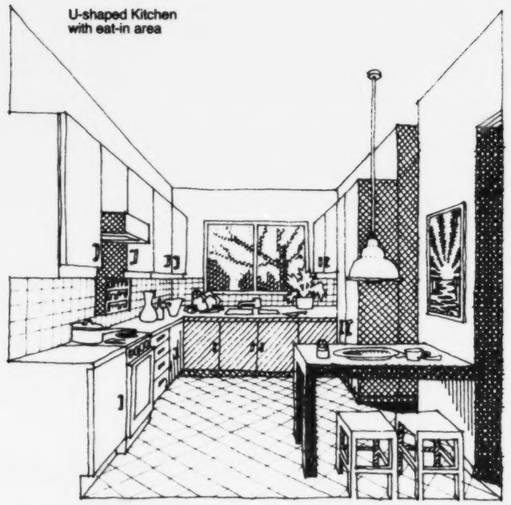
Facade Buyer preferences are similar to those of other buyer groups in that the number of bedrooms, the presence of a half-bath on the main floor, and kitchen layout are significant factors. However, the relative importance of these internal design attributes, especially bedroom number, is generally less than with other buyer types. This allows more flexibility in trade-off options.

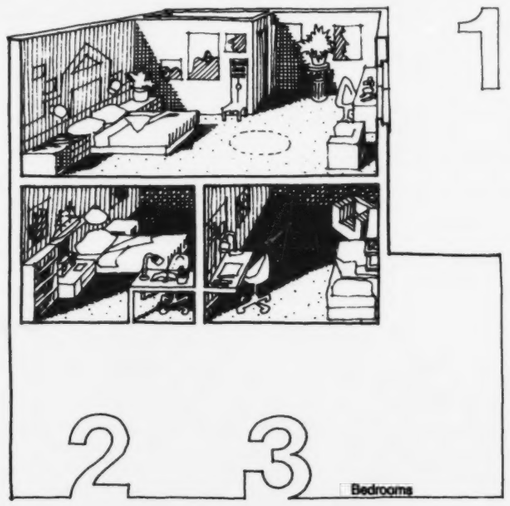
Kitchen Layout. A U-shaped kitchen layout is an important, if not the most important, unit attribute to Facade Buyers. L-shaped and "in-line" kitchen layouts are so strongly disliked that no other unit attribute could compensate for them. Buyers in this group value a U-shaped kitchen layout to the extent that a two bedroom unit or a unit with no half-bath would be accepted if it resulted in obtaining the preferred kitchen layout.

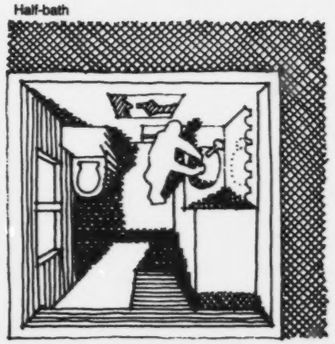
The size of the kitchen should be large enough to accommodate an eating area. Preference is for the main dining area to be integrated with the living room, although this is of limited significance. More important are kitchen cupboard doors with styled doors preferred over plain ones.

Half-Bath. Facade Buyers prefer a unit with one and a half baths, generally with the half-bath on a different level than the full bath.

Number of Bedrooms. Most buyers of this group prefer a three bedroom unit, i.e., one with a large master bedroom and two smaller, secondary bedrooms. However, the preference for three bedrooms is not as strong as with other buyer groups. A two bedroom unit with a half-bath or a decorative facade, for example, would be preferred to a three bedroom unit without these.





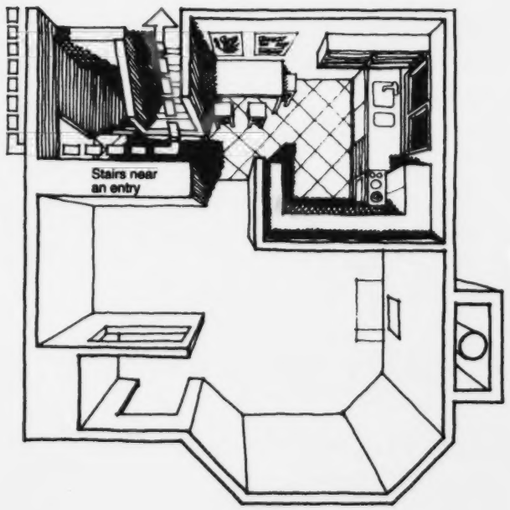


Facade Buyer preferences were also affected by variations in the following internal design attributes:

Stairway Location. Stairs located near an entry were preferred over a more central location.

Second Entry Type. In contrast to other buyer groups, the second entry door type is relatively important to Facade Buyers. A hinged door is definitely preferred over a sliding patio door at the second entry.

On the whole, Facade Buyers are relatively indifferent to living room size and the presence of a main entry foyer, and have only a slight preference for a large living room and smaller dining area and no foyer.

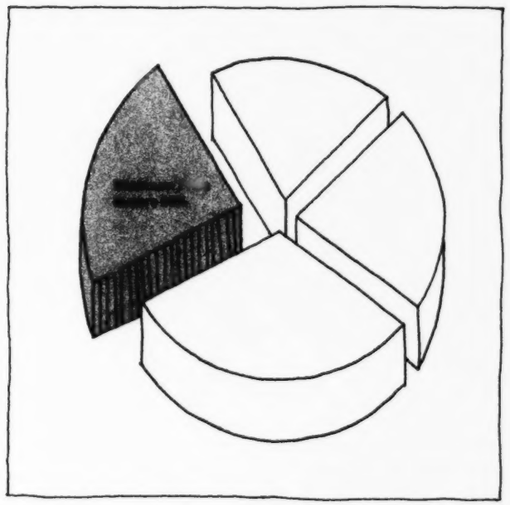


Trade-Offs in Construction-Related Attributes

Although aspects of construction quality are no less important to Facade Buyers than to other buyer groups, they have a less adverse reaction to leaving non-structural items for buyer completion.

Upgraded insulation is the most important construction related trade-off for the Facade Buyer. Most Facade Buyers would probably be willing to trade buyer completion of one non-structural aspect for about $1000 worth of extra insulation.

Minimum Price Buyers Preferences and Trade-Offs



Trade-Offs in External Design Attributes

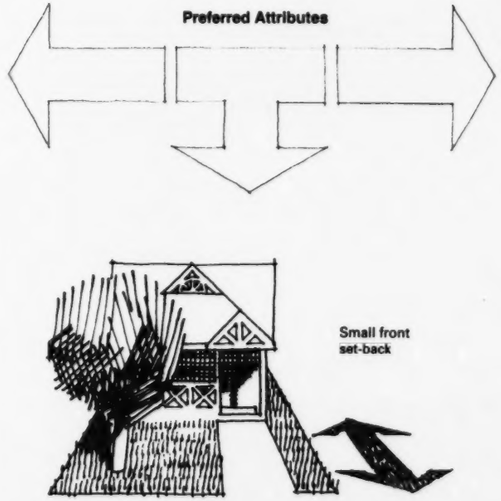
Minimum Price Buyers are primarily distinguished from other buyer groups by the high value placed on realizing cost savings in unit price through trade-offs in unit area. They are the only buyer group which will participate in such trade-offs without necessarily adversely affecting preferences. Reductions in unit area and associated cost savings increase Minimum Price Buyer's preference only to a degree that suggests buyers in this group value marginal changes in unit area at less than $215 per square metre.

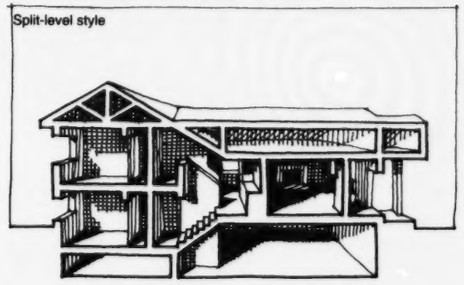
Although important, cost saving trade-offs in area are less significant to Minimum Price Buyers than the facade, style, and set-back of the unit.

Facade Treatment. Minimum Price Buyers are similar to Facade Buyers in the high value placed on decorative facades. 9.29 square metres of unit area would be traded by a Minimum Price Buyer for a decorative facade, whereas a plain facade would not be acceptable to these buyers.

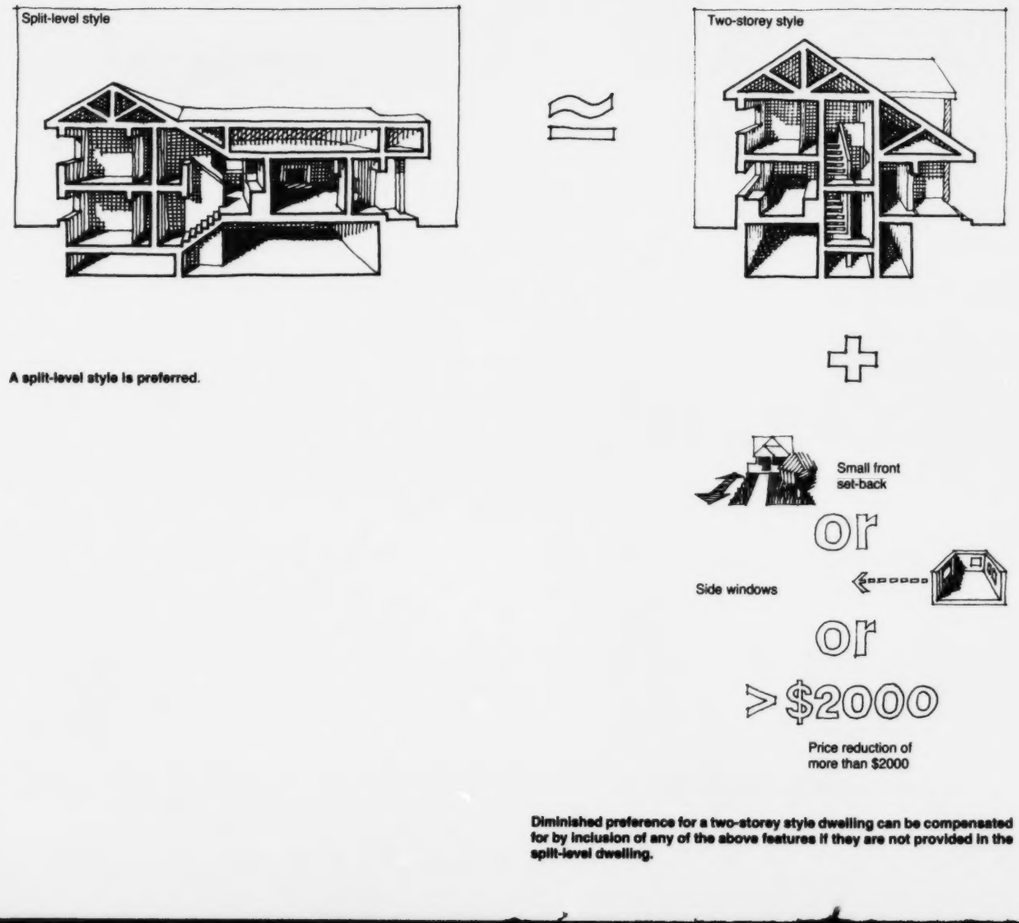
Unit Style. A split-level style is most preferred by Minimum Price Buyers. However, in contrast to other buyer groups, two-storey units are preferred to bi-level and bungalows on narrow lots. These buyers prefer a two-storey to a split-level unit if it means getting a small (4.6 metre) front setback, a smaller unit at a lower price, or windows on all sides of the unit.

Front Yard Set-Back. A 4.6 metre front set-back is more important than cost savings. Savings would have to exceed $2000 in order for buyers of this group to accept a 7.6 metre set-back.





Example of Design Trade-Offs



A split-level style is preferred.

Diminished preference for a two-storey style dwelling can be compensated for by inclusion of any of the above features if they are not provided in the split-level dwelling.

Aside from window location, other external design attributes have a relatively minor effect on Minimum Price Buyer preferences.

Window Location. Minimum Price Buyers prefer to have windows on all sides of a unit, and are relatively indifferent to having a narrower unit if this trade-off is required to gain side windows.

Entry Locations. Front and back entry locations tend to be preferred by the Minimum Price Buyer group, although the second entry location is less significant and can be more or less dictated by unit style requirements.

Unit Shape. Minimum Space Buyers are relatively indifferent to unit shape, with a rectangular shape being slightly preferred to an L-shape.

Parking Location. Parking location was the least important external design attribute to Minimum Price Buyers, with street access to front yard parking being slightly preferred.

In designing single detached housing units most acceptable to Minimum Price Buyers, facade treatment, front yard set-back, window location, cost savings and the avoidance of bungalow styles must be kept in mind.

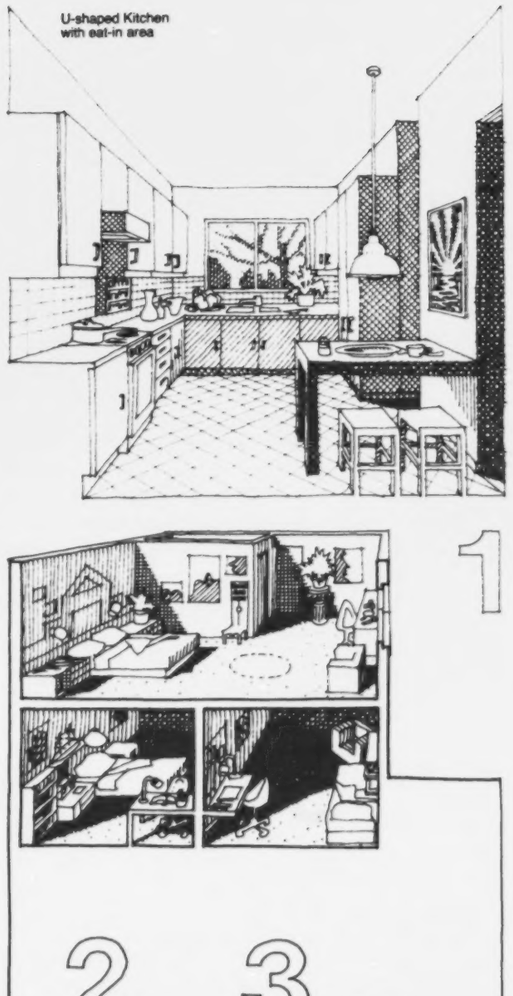
Minimum Price Buyers Preferences and Trade-Offs

Trade-Offs in Internal Design Attributes

Minimum Price Buyers place a higher value on saving on the price of a new unit than on unit area. Room sizes are generally of less importance to this group than other internal attributes. Preferences of Minimum Price Buyers are mainly influenced by kitchen layout and design, number of bathrooms, and number of bedrooms.

Kitchen Layout. Consistent with preferences of most single detached buyers, a U-shaped kitchen is most preferred. An L-shaped counter layout is acceptable if it means getting one-and-one-half baths, but an "in-line" kitchen layout cannot be compensated for by any other internal design feature. A kitchen designed to include an eating area is also important to Minimum Price Buyers, and a choice of eating areas between the kitchen and a dining area integrated with the living area is the most preferable arrangement. Styled cupboard doors are much preferred over plain doors. Overall, kitchen design issues tend to be more important to these buyers than even the number of bedrooms.

Number of Bedrooms. Three bedroom units are most preferable to Minimum Price Buyers. However, a two bedroom unit is acceptable if it means getting a preferred kitchen counter layout, an eating area in the kitchen, styled cupboard doors, or one-and-one-half baths. The relatively lower preference shown for three bedrooms by Minimum Price Buyers should allow more flexibility in floor plans and layouts. Splitting bedrooms between levels would appear to be acceptable to most of these buyers.



Other internal design attributes tend to have less of an effect on Minimum Price Buyer preferences.

Stairway Location. Stairs should be located near an entry.

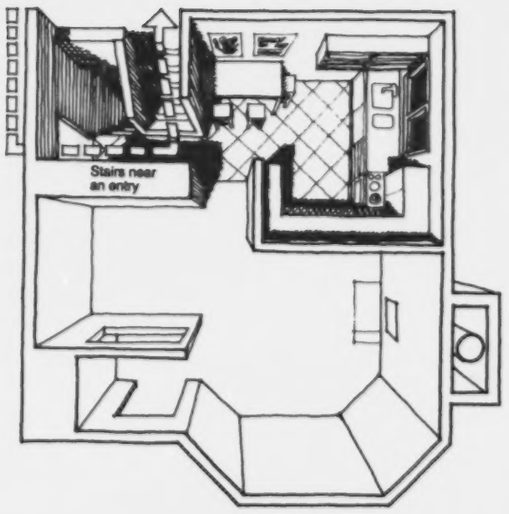
Living Room Size. A larger living room and smaller dining area is preferred by Minimum Price Buyers. Living room size however, is not so important that buyers in this group would eliminate the main entry hall or foyer in order to increase the living room size.

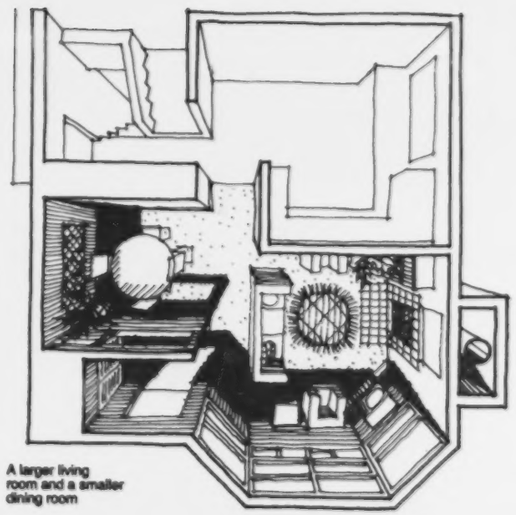
Second Entry Type. Minimum Price Buyers prefer hinged doors at the second entry over sliding patio doors.

Trade-Offs in Construction-Related Attributes

Minimum Price Buyers are somewhat different from other buyer types in their readiness to trade-off some degree of construction completion for cost savings. Buyer completion of flooring is not preferred by this group. Most would prefer to have a unit with the carpeting and linoleum installed. However, if it came to a choice between linoleum flooring throughout the unit and a $300 saving, or buyer completion of flooring and a $1300 saving, the larger cost saving would be preferred.

Upgraded insulation is also quite important to Minimum Price Buyers. Viable trade-offs for about $1000 worth of extra insulation include buyer completion of interior walls or flooring.





A larger living room and a smaller dining room

Cost Saving Trade-Offs

Opportunities for reducing unit costs without decreasing buyer preference or livability are relatively limited for moderately priced, single-detached units. Cost savings derived from changes in items of high perceived value, such as the facade treatment or the half-bath, result in major reductions in preference for the unit. A similar effect is also associated with a less than completedly finished unit.

The only trade-off acceptable to some buyers, in particular Facade and Price Buyers, is in unit area. Buyers in these groups will trade-off unit area for cost savings of about $215 per square metre. In the case of Minimum Price Buyers, reductions in area can be valued at even lower amounts. Given the importance construction quality has for single-detached buyers, preferences and livability would probably be increased if cost savings were used to upgrade insulation, floor and wall surfaces, and other visible construction-related items.

Maximum Space Buyers. Trade-offs which reduce direct construction costs without reducing the acceptability of the unit to the Maximum Space Buyer are relatively limited. Reductions in unit area generally cannot be used to reduce price. Some buyers may trade a reduction in area for a fancy facade with a net cost saving.

Style Buyers. No major cost savings involving unit attributes are possible for Style Buyers without adversely affecting the acceptability of the unit. Some minor savings could be realized in trading facade treatment for unit area.

Facade Buyers. Facade Buyers, as distinct from Space and Style Buyers, will entertain cost saving trade-offs. Major cost reductions can be achieved through reductions in unit area without adversely affecting buyer preference. In fact, preference is sometimes slightly enhanced by cost savings realized in this manner. Trade-offs in buyer completion, although not reducing net cost, can also be made with this buyer group in order to compensate for the increased cost of upgraded insulation.

Minimum Price Buyers. Minimum Price Buyers are the other group of single-detached buyers for whom cost saving trade-offs can be made without necessarily adversely affecting preferences. As with Facade Buyers, major price reductions can be achieved through reductions in unit area. Enough flexibility also exists with this group of buyers to allow improvements in other aspects of construction quality without increasing overall unit costs. Additional costs incurred through the upgrading of insulation and kitchen cupboards, for example, can be traded off for cost savings in buyer completion of such items as painting of interior walls or reductions in unit size.

Design Implications

Most discussions of single-detached unit buyers treat first time buyers as a distinct but undifferentiated market segment. This analysis and review, it is hoped, has brought out the fact that some important differences do exist among first time buyers, and that such differences must be recognized if buyer preferences are to be maximized.

Design decisions in a number of specific areas have a major effect in determining which of the four buyer segments will most prefer a specific single-detached unit, as well as the degree of that preference.

Unit Style. Given a narrow (9.14 metre/30 foot) lot, split-level or bi-level style is preferred over any others by buyers. A split-level has the most appeal to Maximum Space Buyers and Style Buyers, whereas a bi-level is most appealing to Facade Buyers. Market size is considerably limited with two-storey units, although Minimum Price Buyers will consider such a unit if preferred unit attributes are not available in other detached units available.

Facade treatment. All buyer types prefer a decorative facade to a plain facade even if this results in a smaller unit size. The only buyer type attracted to a plain facade is the Maximum Space Buyer and then only if unit size and siting preferences can be increased. Use of a plain facade would limit potential size to about 20% of first time buyers.

Unit Siting. Front yard set-back, separation spaces, and window locations are important to the preferences of all four buyer types. Maximum Space Buyers will accept a larger front yard set-back in trade for more unit area, a split-level style or a decorative facade. Style Buyers will accept a zero-lot-line unit and trade off side window locations for similar considerations. The net effect, though, of not having windows on all unit sides, or of not minimizing frontyard set-back, is to limit the preference for such units to less than half of first time buyers.

Unit Area. Major trade-offs in unit area for cost savings can be made with two buyer groups. Both Facade Buyers and Minimum Price Buyers will trade-off unit area for cost savings. Buyers seem to value reduced unit area at about $215 per square meter ($20 per square foot).

Degree of Completion. Most single-detached housing buyers prefer a totally completed unit and would not trade off buyer completion of non-structural items for cost savings. Additional costs associated with improvement of construction quality and workmanship, which are of major importance to the purchase decision, will have to be offset through savings in other design aspects.

Decisions with respect to these design attributes will largely determine which buyer types are most attracted to a particular single-detached unit. Presumably, such decisions will also affect potential market size and the saleability of particular units.

In addition to these unit attributes previously discussed, a number of other attributes, although not as important in determining which buyer group would be most attracted, are significant influences on buyer preference. A half-bath, a U-shaped kitchen, and three bedrooms have high perceived values for buyers of all four groups. Departures from these attributes invariably decrease buyer preference, and these departures are difficult to compensate with trade-offs. This strongly suggests that they must be included in the design of a single family unit in order to maximize potential market size.

Total unit price and unit area also are of major importance in the marketing of new single-detached units. The implicit assumption made throughout the discussion of single-detached units was that unit prices for first time buyers averaged around $75,000 to $80,000 with a unit size of about 102 square metres (1100 square feet). Analysis of buyer preference in terms of unit area and maximum affordable price for their next home, however, suggests that both these parameters cover a much broader range. Most recent purchasers tend to have their sights set on larger, more expensive homes for their second purchase. The fact that the four buyer types occur in roughly the same proportion in all price and size ranges. This suggests that designing units for different buyer types is not dependent on price or total unit size. Therefore, design decisions which seek to improve livability or reduce costs in moderately priced single-detached units should be based more on the preferences of specific buyer groups than on price or unit area considerations.

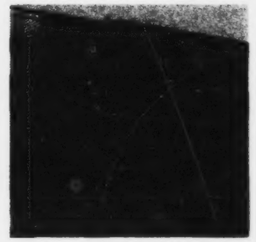
Design of single-detached units to incorporate preferred unit attributes may be impeded by two types of constraints: increases in construction cost and regulatory constraints. Under the discussion of buyer preferences and trade-offs, unit attributes which would increase costs were generally associated with others which would offset these increases. For example, a decorative facade and deviations from a rectangular shape were associated with reductions in unit area. Using this approach, construction cost increases associated with preferred unit attributes should only be marginal. Cost increases which do occur are primarily associated with a net increase in preference for the unit. Such cost increases would therefore be compensated for by reductions in area.

In only one area did preferred buyer attributes conflict with regulatory requirements. Most buyer types prefer a wider unit. However, to situate a wider unit on a narrow lot requires zero-lot-line siting with the attendant restrictions on side window locations. The absence of windows on all unit sides tends to have a fairly substantial negative effect on buyer preference. It is unlikely that such regulatory requirements can be changed. The best compromise solution is to have two side yards and preferred window locations. The preferability of this alternative more than offsets the less preferred narrow unit.

Single-detached unit buyers tend to place a high value on decorative facades. While there are no regulatory constraints which put a direct limitation on facade treatment, lending regulations for units financed by Alberta Home Mortgage are such that certain facade elements are considered "frills" and are restricted in number.

Land use by-laws place restrictions on the use of front yard parking. However, since only Maximum Space Buyers show a marginal preference for this type of parking, this restriction cannot be considered as seriously affecting buyer preferences.

Semi-Detached Units



33 Buyer Types
33 Preferences and Trade-Offs
35 Cost Saving Trade-Offs
35 Design Implications

Semi-Detached Units

Buyer Types

The evaluation for semi-detached units was carried out on a much more limited scale than for single-detached units. Overall sample size in both Calgary and Edmonton was limited to 50 households who had purchased moderately priced units within the last year. Prospective buyers of semi-detached units were not included since no showhomes were specifically selling this type of unit at the time of the study.

Although the intention of the survey was to obtain responses from only recent buyers of semi-detached units, a number of responses were from households renting their unit (29%). It was decided to retain renters in the sample given the small sample size and the relevance of their experiences living in new semi-detached units.

Because of the small sample size semi-detached buyers were considered as a group and not classified into buyer types as with single-detached housing.

Preferences and Trade-Offs

Since semi-detached buyers were considered as a group and not classified into buyer types, preferences and trade-offs only apply to the group as a whole. Unit attributes examined in terms of buyer preferences in semi-detached units was very much the same as for single-detached units. The main differences occurred in the siting of the unit, facade treatment and location of windows.

Distinguishing preferences and trade-offs of semi-detached buyers derived from the lack of physical separation between units and the visual impact created by connected units.

Trade-Offs in External Design Attributes

Most important to semi-detached buyer preferences in terms of external design attributes are those attributes related to external appearance.

Facade Treatment. A decorative or fancy facade has a major effect on increasing buyer preferences even if additional costs are off-set by reducing the unit area by 9.29 square metres. Few, if any, semi-detached buyers would trade off cost savings or other unit attributes for a plain facade.

Preference is generally increased if styles are mixed. Mixed styles which were specifically analyzed were the bungalow and two-storey styles. Given these choices, buyer preference was greatest with a bungalow attached to a two-storey as opposed to two attached bungalows or two attached two-storey units.

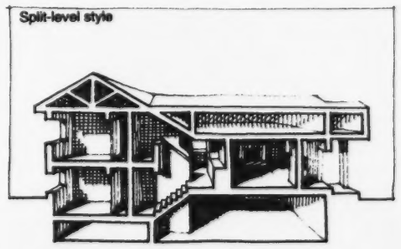
Preference was also increased by the appearance of only one, versus two entries, on the front facade. Overall, the preference for one entry appearing on the dual facade is more important than mixing styles between two adjoining units.

Unit Style. A split-level is most preferred. However, individual unit style does not have a major impact on buyer preference. The decrease in preference resulting from a bi-level style is very slight and most buyers would accept two-storey and bungalow styles in order to have mixed styles in attached units.

The evaluation of buyer preferences in external design attributes of semi-detached units also included the following attributes:

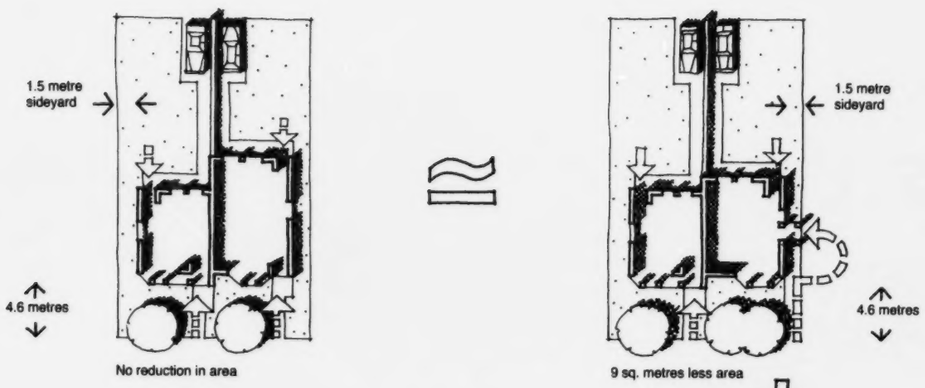
Unit Width. The width of the unit affects parking location. Preference is increased with a wider (7.6 metre) unit width and rear lane access to backyard parking instead of a narrower unit which allows side drive parking. Unit width and parking location are less important to preferences than attributes associated with facade appearance.

Front Yard Set-Back. A 4.6 metre set-back is generally preferred over a 7.6 metre set-back if the latter decreases backyard space. A large front yard would be preferred if it resulted in desired facade features or increased unit width.

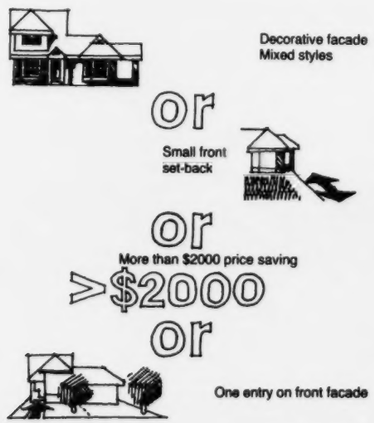


Semi-Detached Units

Example of Design Trade-Offs



A larger dwelling is preferred.



Diminished preference for a unit with 9 sq. metres less area can be compensated for by inclusion of any of the above features if they are not provided in the larger dwelling.

Entry Locations. Despite the importance the number of entries has on preference the location of the main entry for a particular unit has no effect on buyer preference. Location of the second entry is much more important and preference is increased by a back entry instead of a side entry.

Unit Shape and Area. Preferences among variations in unit shape are relatively minor although a rectangular shape is somewhat preferred to a smaller L-shaped unit. Likewise, trade-offs in unit area for cost savings also have a relatively minor effect on preferences. As a group semi-detached buyers are indifferent to the cost savings resulting from a 9.29 square metre reduction in unit area. A 18.58 square metre reduction tends to decrease preferences slightly.

Facade and appearance related attributes are the most important in terms of buyer preferences and variations in other external design attributes would be acceptable trade-offs to maximize these two attributes.

Trade-Offs in Internal Design Attributes

As was the case with most single-detached buyer types, the number of bedrooms and bathrooms, and kitchen layout and design have the greatest impact on preferences.

Number of Bedrooms. A large master bedroom and two smaller secondary bedrooms are most preferred. Bedroom number was the most important attribute included in the analysis.

Half-Bath. A half-bath on the main floor also has a major impact on buyer preference and would be traded off only if this meant a three bedroom instead of a two bedroom unit.

Kitchen Layout. The decline in preference with an L-shaped over a U-shaped kitchen is not very great and trade-offs involving variations in living and dining area size can compensate for this decline. Buyers are essentially indifferent to whether cupboard doors are plain or styled.

Generally, semi-detached buyers prefer a larger dining area integrated with the kitchen. Living room size can be traded off for increased dining area and the kitchen area should be large enough for an eating area or breakfast nook. In comparison to the attributes just discussed, other attributes have a relatively minor effect on buyer preferences. As a group, semi-detached buyers prefer a main entrance foyer, stairs located near the entry and a sliding patio door as a second entry. Trade-offs in these attributes can easily be made to allow variations that would increase buyer preferences.

Trade-Offs in Construction-Related Attributes

Quality of soundproofing between units and quality of thermal insulation are very important to semi-detached buyers. Buyers would, for the most part, prefer to make the trade-offs to upgrade both insulation and soundproofing. Upgrading insulation tends to be the most important of the construction-related trade-offs examined. Buyers will trade completion of painting, flooring or even kitchen storage space if the associated costs are applied to upgraded insulation. Painting of interior walls and floor finishing can also be traded for upgraded soundproofing. These trade-offs do not imply that preferences will not decrease if items are left for buyer completion. Preference will decrease, but upgraded insulation and soundproofing can compensate for these declines in preferences.

Cost Saving Trade-Offs

For semi-detached buyers as a group, relatively few opportunities exist to reduce total unit costs without adversely affecting buyer preferences for a unit. Increased costs for facade treatment and upgrading construction quality can be offset by unit area reductions and buyer completion of certain non-structural items. Cost savings that go beyond these aspects could result in some decline in preference for the unit.

One possible source for additional savings is in further reduction of unit area. Such a reduction has only a relatively minor effect in preference decline for semi-detached buyers as a group. Undoubtedly, some semi-detached buyers would prefer the cost savings attributable to area reduction.

Upgraded insulation preferred

Design Implications

Given the degree to which buyer preferences are affected by variations in some unit attributes, it seems reasonable to conclude that special consideration should be directed to these attributes.

External Appearance. Facade appearance and mix of unit styles are very important to buyer preferences for a semi-detached unit. Preferences are greater for attached units of dissimilar unit style that give the impression of one large unit with continuity of design, facade treatment and a single visible entry, as opposed to two smaller attached units, each with its own front door. Considerable flexibility is possible in the mix of styles without adversely affecting buyer preferences.

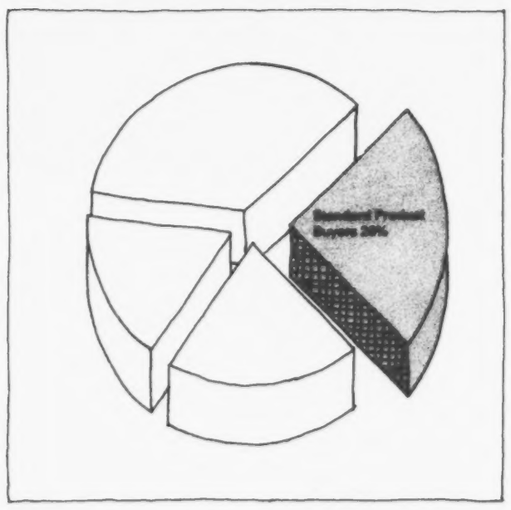
Internal Attributes. A semi-detached unit should have at least three bedrooms, one-and-one-half baths and a U-shaped kitchen layout in order to maximize buyer preferences. Cost savings through eliminating such attributes would not be prudent due to a resulting severe decrease in buyer preference for the unit.

Construction Quality. Workmanship and construction quality, especially in soundproofing and insulation, are extremely important to the purchase decision. Although improvements in these areas are not a matter of just additional costs, most buyers appear to be willing to make compromises in order to trade off extra costs associated with upgrading of construction quality.

Conflicts between regulatory constraints and buyer preferences are not a problem. If reductions in unit area are sufficient to compensate for increased costs of facade treatments, construction cost constraints should be relatively minimal in designing semi-detached units which meet buyer preferences.

Townhouse Units

Standard Product Buyers Preferences and Trade-Offs



Trade-Offs in External Design Attributes

The most important buyer preferences in terms of external unit and project attributes are those associated with type of attachment and unit area.

Type of Attachment. Side-by-side attachment is much preferred over back-to-back attachment. Preference is even greater if block size is limited to four units, although the number of units per block has only a relatively minor effect on buyer preferences.

Unit Area and Shape. Trade-offs which result in a smaller unit size will decrease buyer preference. This group would not be willing to trade off an 18.58 square metre reduction in unit size for a $4000 cost saving nor would it consider trading off 9.29 square metres for an L-shaped unit. Only if preferred attachment type is available in no other way will a smaller unit size be acceptable.

Other unit attributes that affect buyer preferences are:

Outdoor Living Area. Backyard size cannot be increased at the expense of common open area or by the elimination of a tot-lot without decreasing buyer preferences.

Parking. Parking near the unit is preferred over grouped parking further away with its associated cost savings. The decline in preference as a result of grouped parking is relatively minor and can be offset by increased unit area.

Unit Width. Buyers are relatively indifferent to unit width and increasing unit width by 1.5 metres (4 feet) has only a marginal effect on buyer preferences.

Trade-Offs in Internal Design Attributes

These attributes tend to be much more important to the Standard Product Buyers than external unit or project-related attributes. Of particular importance are the number of bedrooms, bathrooms and kitchen layout and design.

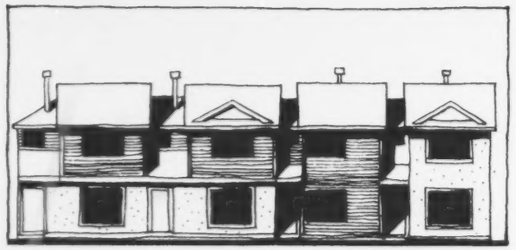
Number of Bedrooms. A three bedroom townhouse unit consisting of a large master bedroom and two secondary, smaller, bedrooms is much preferred over two larger bedrooms. A two bedroom unit results in a major decline in preferences among these buyers.

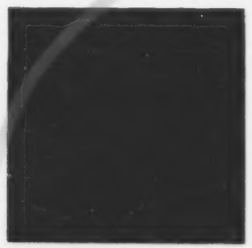
Half-Bath. Buyers in this group would not trade-off a half-bath for $1500 in cost savings or any other unit attributes.

Kitchen Layout. The U-shaped kitchen layout is preferred over the L-shaped layout but the L-shaped layout is acceptable in return for inclusion of an eating area. Preference is for an eating area in the kitchen and a main dining area integrated with the living room. Styled cupboard doors are preferred over plain doors.

A larger living room is preferred at the expense of space that could be allocated to the dining area. A foyer separating the main entry from the living room has a major effect on increasing preferences. Of less importance are stairway location and secondary entry type. A central location is preferred for stairs and a sliding patio door is preferred for the secondary entrance.

Townhouse Units





37 Buyer Types

38 Common Preferences

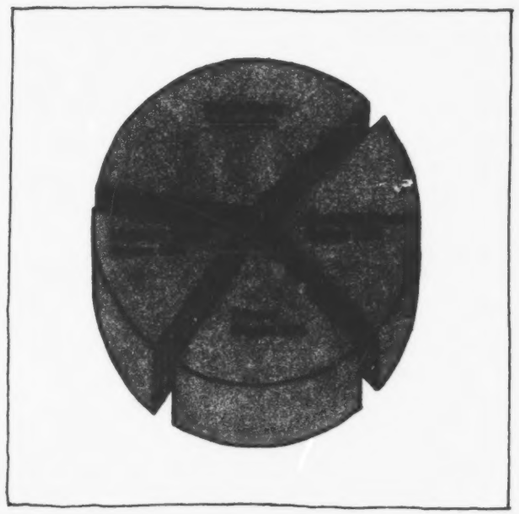
40 Preferences and Trade-Offs by Buyer Types

48 Cost-Saving Trade-Offs

48 Design Implications

Townhouse Units

Buyer Types



In a manner similar to the analysis of single-detached unit buyers, recent townhouse buyers were also grouped into four homogeneous buyer types on the basis of their preferences for selected unit attributes.

Sweat Equity Buyers

A major distinguishing characteristic of the 36% of recent townhouse buyers in this group is their preference for realizing cost savings in the unit price resulting from buyer completion of non-structural aspects in the interior of the unit. Sweat Equity Buyers were somewhat more prominent in the Calgary market.

Most households in this buyer group were young married couples with slightly more than half of the households having children. One in ten households was headed by a single parent. The average household income was $31,000 and the average age of the respondents was 27.

Privacy Buyers

The 20% of respondents classified as Privacy Buyers are primarily distinguished from other buyer types by their preference for trade-offs which result in more privacy both inside and outside the unit. These buyers were more likely to be recent Edmonton townhouse buyers.

Privacy Buyers had the highest average income of any townhouse group and 69% of the households had two incomes. The average age was also slightly older than in other groups but household composition remained quite similar. The average household income was $32,000 and the average age of the respondents was 29.

Standard Product Buyers

Twenty-six percent of recent townhouse buyers were Standard Product Buyers. Preferences of these buyers are generally decreased by alternatives deviating from product which has typically been built for the Calgary and Edmonton markets.

Households in the second buyer group are quite similar to Sweat Equity Buyers. Household size is slightly larger given that there are more two children households in this group. About half of the households (51%) have two incomes, somewhat fewer than the 59% of Sweat Equity Buyers that have two incomes.

The average household income was $30,000 and the average age of the respondents was 26.

Minimum Space Buyers

The smallest group of townhouse buyers are characterized by their preference for realizing cost savings in unit price through the reduction of the unit area. Only 18% of townhouse households were Minimum Space Buyers.

Of the townhouse renters that were included in the total survey (5% overall) — over half of these fell into this group. This may partially account for the slightly lower household incomes and smaller average household size in this group. The average household income was $24,000 and the average age of the respondents was 28.

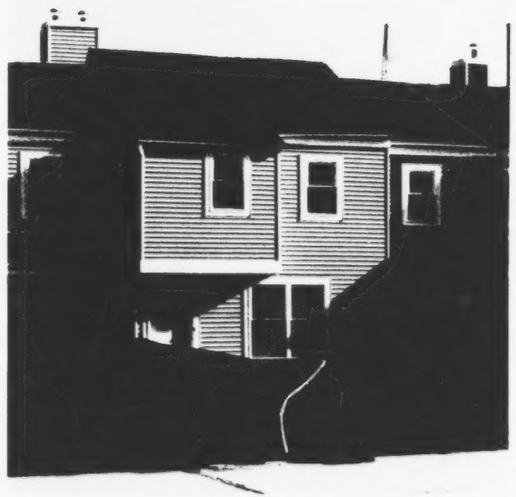
Common Preferences

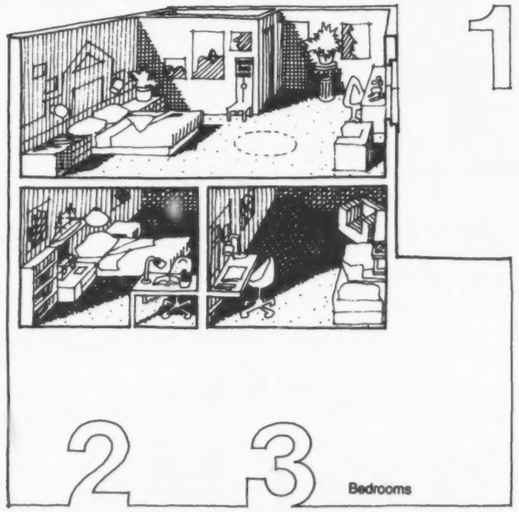
Unit features associated with external design attributes were formulated differently for townhouse units than for other unit types. Variances in facade and style were not evaluated, given that most moderately and low priced townhouse projects in Calgary and Edmonton are typically two-storey units with uniform facade treatments. However, special attention was paid to variances in unit and project attributes which could result in cost savings since price advantage is one of the major benefits sought by townhouse buyers.

External Design Requirements

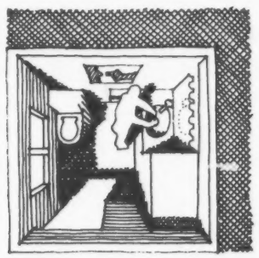
Unmet design requirements external to the unit itself were mainly related to aspects of privacy, yard sizes, parking location and circulation. Preferences of buyer types vary somewhat for unit attributes associated with these requirements.

- Side-by-side attachment is preferred by all buyer types except for Privacy Buyers who prefer a back-to-back attachment of four units;
- All buyer types except for Privacy Buyers prefer parking close to the unit over potential cost savings of grouping parking further from the unit.
- Reductions in unit size are not preferred except for Minimum Space Buyers who would prefer reduced area along with associated cost savings.
- Block length tends to affect exterior accessibility to backyards. Preferences are generally for shorter blocks of four units. The decrease in preference from attaching side-by-side units in longer blocks is relatively minor if cost savings can be realized.





Half-bath



1 Internal Design Requirements

Preferences for internal unit attributes are fairly consistent across buyer types. Preferences are generally increased for most buyers if a unit has the following attributes:

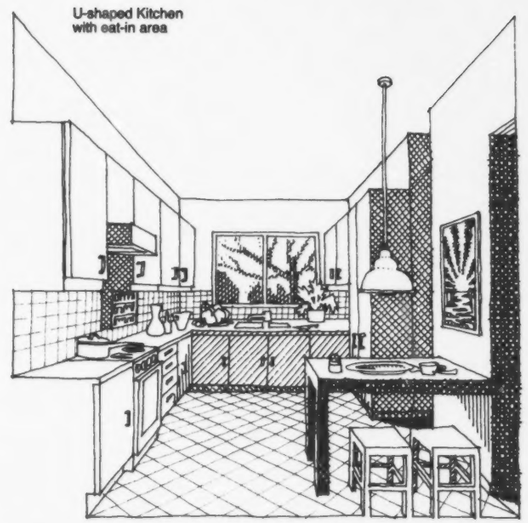
- three bedrooms, one-and-one-half baths;
- U-shaped kitchen counter layout;
- main entry foyer with stairs next to the entry; and
- an eating area in the kitchen with an optional small dining area integrated with the living room.

Construction-Related Requirements

Perhaps somewhat surprising, over 50% of townhouse buyers surveyed preferred cost savings attained through buyer completion of nonstructural items. Both Sweat Equity and Privacy Buyers prefer the cost savings realized by completing painting and flooring to having a completed unit. All buyer types would pay more for upgraded insulation and would seek trade-offs to upgrade soundproofing.

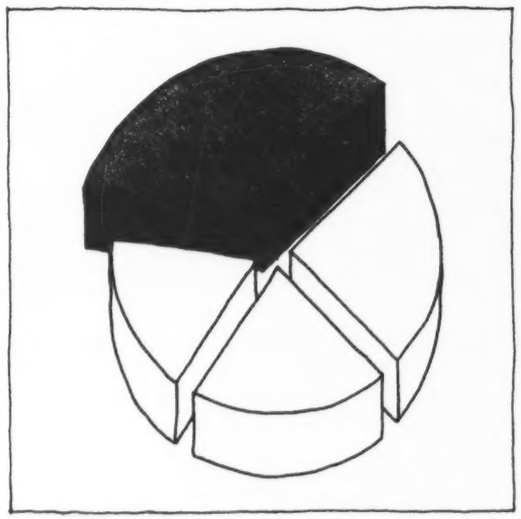
Perhaps a note of caution should be registered concerning the stated willingness of the townhouse buyer to defer completion and assume responsibility for finishing their unit. Some buyers may not be fully aware of all the implications of buyer completion, including practical difficulties and possible higher prices to the owner than those offered by the builder.

U-shaped Kitchen with eat-in area



Upgraded insulation preferred

Sweat Equity Buyers Preferences and Trade-Offs



Trade-Offs in External Design Attributes

Preferences of Sweat Equity Buyers are most affected by the following unit and project attributes.

Type of Attachment. A side-by-side attachment which results in double aspect units is much preferred over back-to-back attachment. Buyers in this group would be unwilling to trade off a side-by-side attachment for any of the other external design attributes.

Unit Area. Unit area or size has an important effect on buyer preferences. Sweat Equity Buyers would not be willing to trade off 18.58 square metres for a $4,000 cost saving unless there was no other way to obtain a double aspect unit. Nor would they be willing to accept an L-shaped unit which increases backyard privacy but results in a reduction of 9.29 square metres of unit area.

Other trade-offs which are not as significant in terms of increasing buyer preference include:

Parking. Preferences tended to decline with grouped parking away from the unit, suggesting buyers would rather forego the $500 cost saving and have vehicles parked directly outside the unit.

Outdoor Living Area. Buyers were presented with two options; a 37 square metre (398 square feet) backyard and a common tot-lot or 55 square metres (592 square feet) of backyard with no tot-lot. Preferences increase with a smaller backyard in exchange for more common area but most buyers would trade off the increased common area for preferred parking arrangements or increased unit size.

Number of Attached Units. Four units in a block are preferred to ten units in a block and the associated $2500 cost saving. Block size has only a minor effect on buyer preferences and the decline in preferences resulting from larger blocks of attached units can be compensated for by trade-offs in other attributes. The actual width of individual attached units has very little effect and buyers are indifferent to unit width.

Trade-Offs in Internal Design Attributes

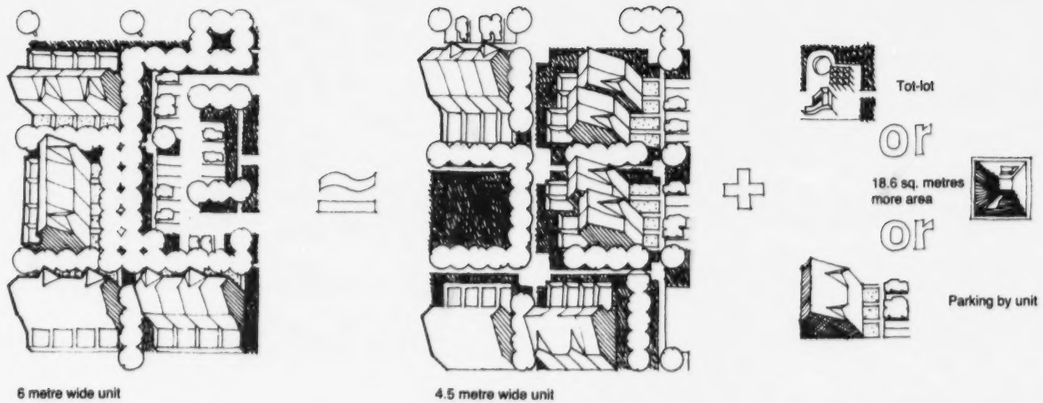
Two unit attributes included in the set of internal design attributes have a major impact on the preferences of Sweat Equity Buyers.

Number of Bedrooms. Almost all buyers in this group would trade a unit with two large bedrooms for one with a large master bedroom and two, smaller, secondary bedrooms. A two bedroom unit results in a major decline in buyer preferences no matter what the trade-offs involved.

Half-Bath. The vast majority of buyers in this group would not trade off a half-bath for a $1500 cost saving. There is a strong preference for a half-bath in a two-storey townhouse.

Overall, Sweat Equity Buyers were not greatly affected by variations in other internal design attributes, although kitchen and living room size tended to have more of an impact on preferences than the remaining attributes.

Examples of Design Trade-Offs

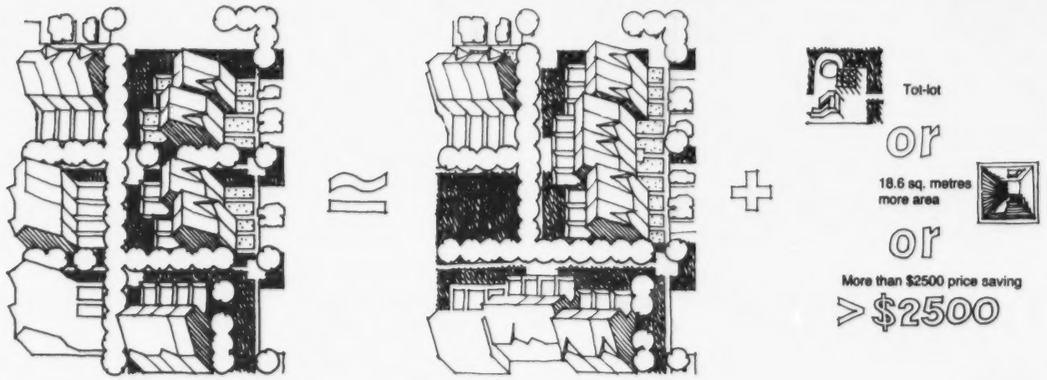


6 metre wide unit

4.5 metre wide unit

A 6 metre wide unit is preferred.

Diminished preference for the narrower unit can be compensated for by inclusion of any of the above features if they are not provided in the project with wider dwellings.



4 unit block

10 unit block

Four units in a block are preferred.

Diminished preference for a project containing ten-unit blocks can be compensated for by inclusion of any of the above features if they are not provided within the project containing four-unit blocks.

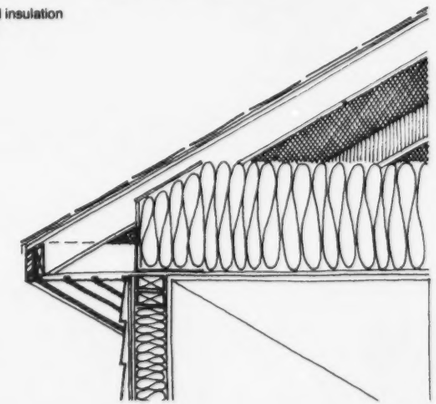
Trade-Offs in Construction-Related Attributes

As a group, Sweat Equity Buyers do not prefer to make cost saving trade-offs in external, project-related or unit size attributes. Preferences are increased by cost saving trade-offs involving buyer completion of non-structural internal aspects of the unit.

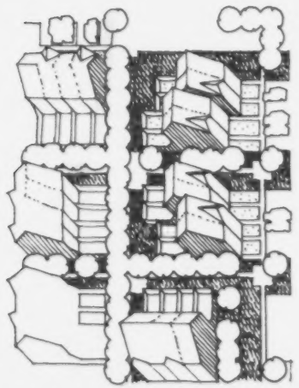
Upgraded soundproofing has a major effect on increasing buyer preferences even if this means considering other cost saving trade-offs. Upgraded insulation has a similar effect on preferences. Increased costs of insulation can be traded off against buyer completion of painting.

Buyers in this group also claim to prefer cost savings from completing the flooring in their units. Preferences are greater for a $1300 cost saving from leaving floors at the subfloor stage than for carpeting of the quality typically used in moderately priced townhouses. There is buyer indifference to trade-offs involving a $1000 savings by leaving walls unpainted.

Upgraded insulation preferred



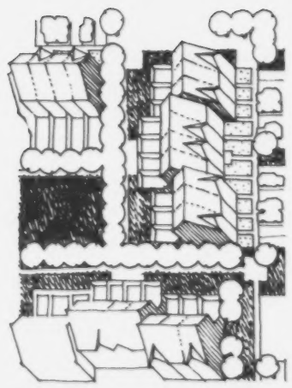
Examples of Design Trade-Offs



4 unit block

A four-unit block is preferred.

≈



10 unit block

+

Tot-lot

or

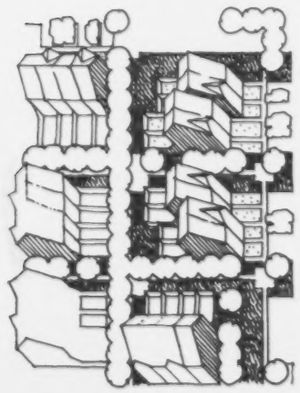
18.6 sq. metres more area

or

More than $2500 price saving

>$2500

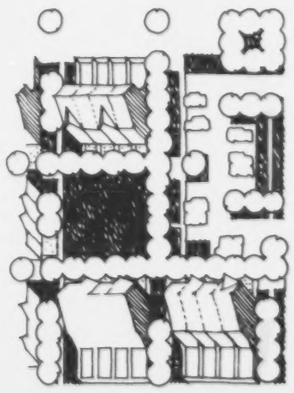
Diminished preference for a project containing ten-unit blocks can be compensated for by inclusion of any of the above features if they are not provided within the project containing four-unit blocks.



Parking by unit

Parking by the unit is preferred.

≈



Grouped parking

+

Tot-lot

or

18.6 sq. metres more area

or

More than $500 price saving

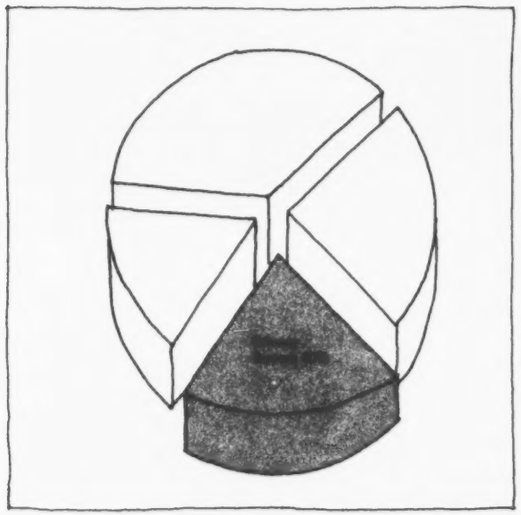
>$500

Diminished preference for a project with grouped parking can be compensated for by inclusion of any of the above features if they are not provided in the project with parking by the unit.

Trade-Offs in Construction-Related Attributes

For the Standard Product Buyer trade-offs in buyer completion of non-structural aspects for cost savings cannot be made without major declines in buyer preferences. It would appear that marginal increases in unit price for quality improvements are more preferred by this group than trade-offs which maintain unit price and result in less than complete townhouse unit.

Privacy Buyers Preferences and Trade-Offs



Trade-Offs in External Design Attributes

This was the only group of townhouse buyers, who as a group, preferred a back-to-back attachment to a side-by-side attachment. This implies limiting units per block to four if preferences are to be maximized. Privacy Buyers are also different from other townhouse buyer groups in their preferences for unit attributes associated with outdoor privacy and parking arrangements.

Unit Shape. Strongest preference is for L-shaped units grouped back-to-back in clusters of four. An acceptable trade-off is a 9.29 square metre reduction in unit area to compensate for increased construction costs of an L-shaped unit. Additional trade-offs in unit area for cost savings will, however, decrease preferences of these buyers.

Unit Width. A back-to-back attachment results in a wider unit and preferences decline with any reduction below a 7.6 metre width.

Open Living Area. Preferences are for more area in the backyard at the expense of the common open area or a project tot-lot. Variances in open living area have a minor effect on preferences and the decline in preferences due to a decline in this area can be compensated for by most other preferred external design attributes.

Parking. The cost savings through grouped parking away from the unit versus parking adjacent to the unit increases preferences, although only to a minor extent. This is the only buyer group that showed a preference for the cost savings associated with grouped parking.

Trade-Offs in Internal Design Attributes

Attributes related to kitchen layout and design and number of bedrooms and bathrooms are most important for this group.

Kitchen Layout. A U-shaped kitchen layout is preferred over other alternatives to the extent that no trade-offs are possible in terms of other unit attributes. The kitchen area should also be designed with an eating area. The preference for styled cupboard doors over plain doors is important.

Number of Bedrooms. A three bedroom unit is much preferred over a two bedroom unit, however, the third bedroom would be traded off by most buyers in this group for preferred kitchen layout and design attributes.

Half-Bath. The number of baths has approximately the same importance to buyer preference as the number of bedrooms. The presence of a half-bath has a major effect on buyer preference. Only kitchen layout is relatively more important.

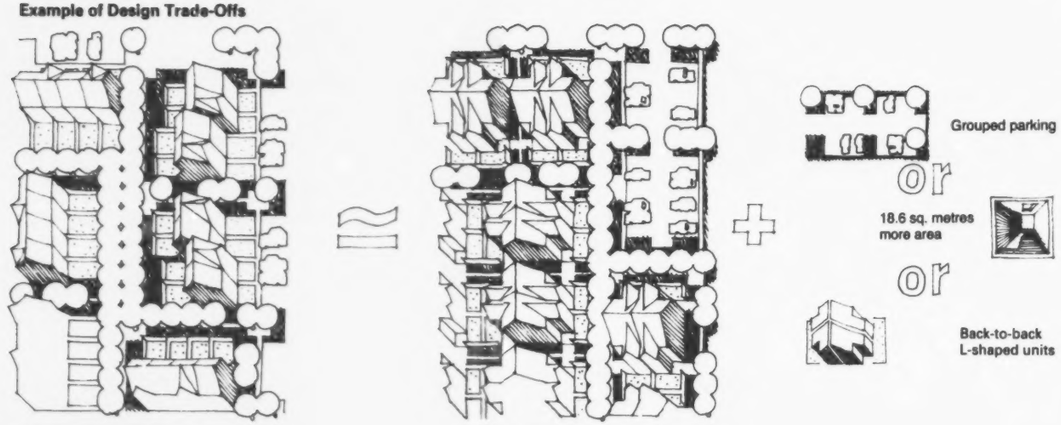
The following unit attributes are also relatively important to Privacy Buyers:

Entry Treatment. Preferences are increased by the use of a hinged door as a second entry versus a sliding patio door. A foyer should separate the main entry from the living room.

Stairway Location. Stairs should be located near the entry to increase preference.

Living Room Size. Most buyers prefer a slightly larger dining area at the expense of the living room size. This trade-off is only of minor importance to preferences.

Example of Design Trade-Offs



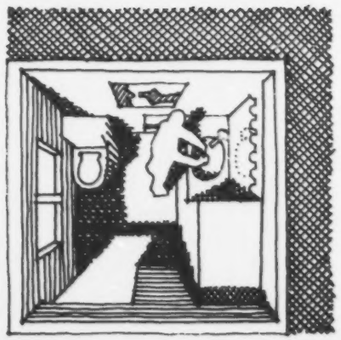
55 sq. metre private open space

A large private open space is preferred.

37 sq. metre private open space

Diminished preference for a project with smaller areas of private open space can be compensated for by inclusion of any of the above features if they are not provided in the project with larger areas of private open space.

Half bath



U-shaped Kitchen with eat-in area

Upgraded insulation preferred

Trade-Offs in Construction-Related Attributes

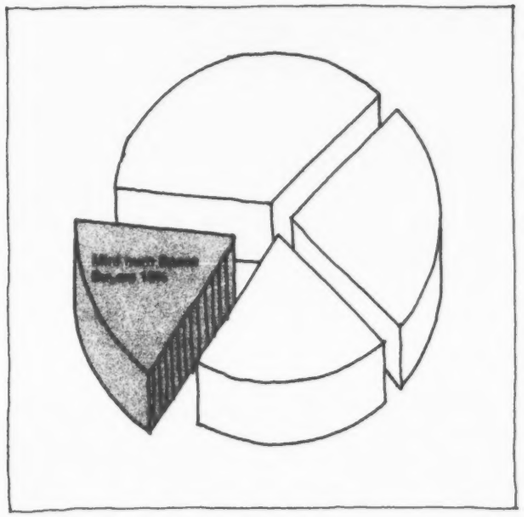
This buyer group is quite similar to Sweat Equity Buyers in their preference for trade-offs of buyer completion of non-structural construction-related aspects for cost savings or quality improvements in other areas. Preferences are greatest with the following trade-offs:

Flooring. Buyer completion of flooring and the associated cost savings are preferred to either linoleum flooring only or typical carpeting.

Wall Surfaces. Buyer completion of painting and associated cost savings are preferred to having walls already painted.

Insulation. Upgraded insulation at extra cost is also preferred to standard insulation.

Minimum Space Buyers Preferences and Trade-Offs



Trade-Offs in External Design Attributes

The following unit attributes included in the set of external design attributes had the greatest effect on Minimum Space Buyer preferences:

Type of Attachment. A side-by-side attachment is much preferred over back-to-back by Minimum Space Buyers. No other external attribute would compensate for the decline in preference resulting from back-to-back attachment. The number of units per block or unit width is of relatively minor importance. A ten unit block versus a four unit block results in a savings of $2500 with only a small decline in preference. Reducing unit width from 6 to 4.5 metres has a smaller negative effect on preferences.

Outdoor Living Area. Trade-offs in common area or a project tot-lot are generally preferred if this results in more backyard space for individual units. An L-shaped unit is preferred to a rectangular shape, even at the expense of 9.29 square metres of unit area.

Parking. Parking adjoining the unit is preferred to cost savings attainable by group parking removed from the unit. Preferred parking would be traded for more backyard space if no other alternative were available.

Unit Area. The preference for trade-offs in unit size or area for cost savings is what most distinguishes Minimum Space Buyers from other townhouse buyer types. The only external unit attributes more important to preferences than such cost savings are type of attachment and backyard size.

Most external design attributes have a fairly substantial effect on buyer preferences. This tends to restrict design alternatives which do not unduly decrease preferences to variation in block size and unit width.

Trade-Offs in Internal Design Attributes

Internal design attributes tend to be of relatively less importance to buyer preferences than other design attributes. The most important attributes were still number of bedrooms and baths, and kitchen layout.

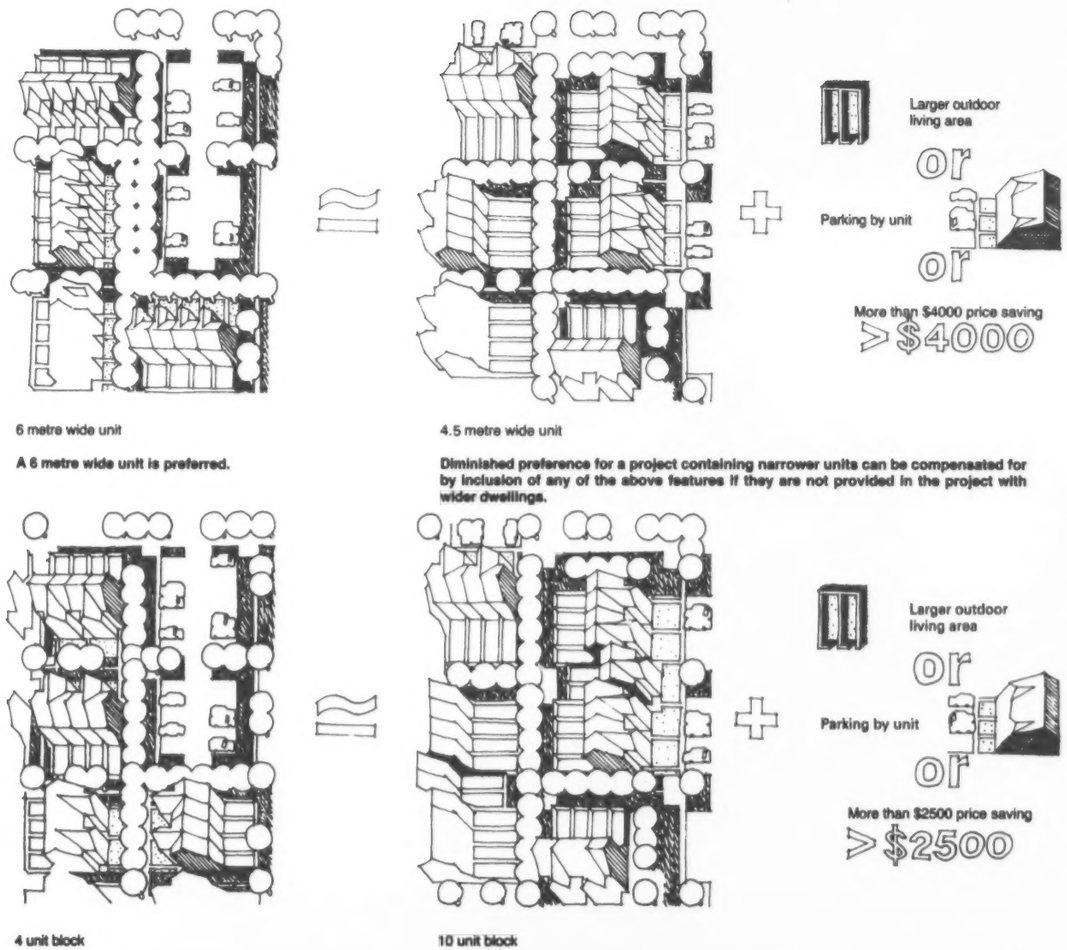
Number of Bedrooms. A three bedroom unit is much preferred over a two bedroom unit.

Half-Bath. A half-bath should be located on the main floor if the full bath is upstairs. A half-bath is valued more than a $1500 cost saving.

Kitchen Layout. A U-shaped counter is much preferred over alternative layouts. Plain cupboard doors are preferred over styled cupboard doors. Preferences for an eating area location are inconclusive.

Generally, preferences are to have no eating area in the kitchen and more living room area to more dining room area. There is a slight decline in preferences resulting from integrating the dining and living room areas. The best compromise may be a small dining area relatively separate from both kitchen and living room.

Examples of Design Trade-Offs



6 metre wide unit

A 6 metre wide unit is preferred.

4.5 metre wide unit

Diminished preference for a project containing narrower units can be compensated for by inclusion of any of the above features if they are not provided in the project with wider dwellings.

4 unit block

Four units in a block are preferred.

10 unit block

Diminished preference for a project containing ten-unit blocks can be compensated for by inclusion of any of the above features if they are not provided in the project containing four-unit blocks.

Trade-Offs in Construction-Related Attributes

Minimum Space Buyers tend not to prefer cost saving trade-offs which involve buyer completion of non-structural construction-related items. Painting or floor finishing by the buyer has a major negative effect on preferences. Upgraded insulation is worth an additional $1000 but upgraded soundproofing is not a strong enough preference to consider other trade-offs.

The only construction-related item buyers would trade off is buyer completion of overhead kitchen cupboards for a $500 cost saving. This trade-off has limited appeal and minor effect on preferences.

Cost Saving Trade-Offs

Considerable cost savings appear to be possible in project layout and buyer completion of townhouse units without reducing preferences or livability for three of the townhouse buyer types:

- An estimated $2500 per unit cost saving is possible by attaching units in longer rows. Preferences are only slightly reduced, except for Privacy Buyers, with this trade-off.
- Privacy Buyers prefer back-to-back attachments and grouped parking. Together these two trade-offs are estimated to save $1000 per unit.
- Minimum Space Buyers will trade off 18.58 square metres (200 square feet) unit area for $4000 in cost savings.
- Sweat Equity and Privacy Buyers prefer cost saving trade-offs in buyer completion. These are estimated to result in a potential $2300 saving.

Sweat Equity Buyers. Areas in which cost savings can be attained without reducing buyer preferences are primarily restricted to aspects of buyer completion. Eliminating the half-bath or reducing the unit area cannot be considered as trade-off items. Additional savings could perhaps be realized by attaching more units in a block.

Based on estimates obtained from builders, savings in direct construction costs in completing to the subfloor stage only average $1800 and leaving walls unpainted saves about $900. Additional costs incurred in upgrading insulation and soundproofing should be less than this amount.

There may be some question as to whether Sweat Equity Buyers would act on their stated preferences about buyer completion when faced with a finished unit and a cheaper unfinished unit. This is an area of the study that should be approached with caution since some evidence shows that few buyers choose to finish their unit themselves in return for cost savings. Buyer completion simply defers expenditures and prices to the owner at the time of completion may be higher than prices offered by the builder at the time of purchase.

Standard Product Buyers. None of the cost saving trade-offs can be applied without decreasing buyer preference, especially trade-offs involving buyer completion or reductions in unit area. Some savings can perhaps be realized by attaching more units in a block or by grouped parking.

Privacy Buyers. Preferences for grouped parking and back-to-back attachment can reduce unit price by an estimated $1000. Additional savings in buyer completion could be as much as $2800. Some of these savings should be used to upgrade soundproofing and insulation. Net reductions in unit price after these quality improvements are estimated in the order of $2000 per unit.

Minimum Space Buyers. Trade-offs in unit area for cost savings on total unit prices are much more acceptable to these buyers than other cost saving trade-offs. Additional savings may be realized in using larger unit blocks which has a marginal effect on preferences. Together, trade-offs in these two aspects are estimated to result in up to $6500 in direct construction cost savings which can be used to upgrade construction quality in other areas or to reduce total unit price.

Design Implications

When planning townhouse units a number of design attributes should be included to increase livability, irrespective of buyer type, and other attributes should be included to maximize preferences of specific buyer types.

The least variation amongst the four townhouse buyer types tends to be in preferences for internal design attributes. Kitchen layout, and the number of bedrooms and bathrooms, are of major importance to the preferences of all four buyer types and therefore trade-offs utilizing these features are restricted. Preferences are maximized with:

- U-Shaped kitchen with a window in the kitchen work area and an eating area in the kitchen;
- a large master bedroom and two smaller, secondary bedrooms; and
- a half-bath near the second entry, if the main bath is on another level.

Preferences for other internal attributes are also fairly consistent across the four buyer types. Deviations from the following attributes tend to have a relatively minor effect on preferences:

- a main entry hall or foyer;
- stairs located next to an entry instead of centrally located in the unit;
- main dining area integrated with the living area; and
- a larger living room at the expense of the dining area.

The major differences amongst the four townhouse buyer types are in their preferences for external unit and project attributes and aspects of buyer completion. For the most part, these differences can be seen as differences in preferences for cost saving trade-offs.

Type of Attachment — a side-by-side attachment is preferred with the exception of Privacy Buyers who prefer back-to-back attachment and then only if double aspect units are used and the attached grouping is limited to four units. Other buyer types also prefer this four unit grouping but for the remaining group larger unit groupings do not affect preferences to the same degree as with Privacy Buyers.

Parking — Privacy Buyers again distinguish themselves in their preference for cost savings attained by grouped parking away from the unit. Preferences for parking next to the unit is not strong for other buyers and cost saving trade-offs are possible.

Unit Area — only Minimum Space Buyers will trade off unit area for cost savings. This group of buyers was the smallest of the four and also had the lowest average household income.

In terms of external unit or project attributes, townhouse buyers can be considered as either preferring the standard type of product built for Edmonton and Calgary markets or preferring variation which results in more privacy for the individual unit. Buyers with strong preferences are primarily classified into Privacy Buyers and Minimum Space Buyers, together representing about 40% of total townhouse buyers. These buyers tend to prefer L-shaped units and larger backyards and increased backyard area is a viable trade-off for less common area or elimination of a project tot-lot. Present regulatory requirements for townhouse projects may restrict such trade-offs for a family-oriented project. However, other trade-offs in grouped parking or unit width may still allow some increase in backyard size.

The other major area of differentiation amongst townhouse buyers is in cost saving trade-offs for buyer completion of non-structural aspects of unit construction. Both Sweat Equity Buyers and Privacy Buyers claimed to prefer to complete the painting of interior walls and finishing floors for either reductions in unit price or improvements in soundproofing, insulation or other aspects of construction quality. Such trade-offs, although they are used in single-detached units, have not been extensively tried in townhousing. Constraints on such trade-offs in townhousing appear to be more of an administrative than regulatory nature.

As a general rule of thumb, moderately priced townhousing should be about $10,000 less than comparably sized, single-detached housing to be attractive to prospective purchasers in the Calgary and Edmonton markets. During the past few years this price difference has been difficult to achieve while still maintaining a satisfactory profit margin. Implementing some of the cost saving trade-offs discussed for townhousing may ameliorate this situation. Trade-offs which can reduce per unit costs are possible for about 75% of townhouse buyers and can range from $2500 per unit by attaching more units in a block to $4000 by trade-offs in buyer completion or reduction of the unit area.

Regulatory constraints could prevent the implementation of preferred unit attributes in two areas. Preferences for trade-offs of common area for increased private open area are to some extent constrained by minimum common area requirements stipulated in local by-laws. Eliminating common area or a tot-lot in a family-oriented development is likely to meet stiff resistance from both regulatory agencies and buyer types who prefer these attributes.

Constraints on buyer completion appear to be more a matter of procedures and establishing responsibility for completion than regulatory constraints. Buyer completion is now being used in single-detached units. Applying it to townhousing requires some demonstration of market demand and increased flexibility on the part of mortgage lenders.

Acknowledgements

This publication was prepared by **McKellar Architects** for the Planning and Research Branch of the Alberta Department of Housing. The work is a summary of a major study on consumer preferences and trade-offs in the design of moderately priced housing in Calgary and Edmonton entitled:

The Study of Design Preferences and Trade-Offs for Moderately Priced Housing in Alberta.

This study, completed in February, 1983, was funded by the Alberta Department of Housing and carried out by:

Strategic Development Services Limited with the assistance of Heine, Johnson, Sustronk, Weinstein & Associates and Summa Partnership Ltd.

Typesetting and printing by Lawson Graphics Western, Calgary, Alberta.

Requests for additional information should be directed to:

Planning and Research Branch
Alberta Department of Housing
Edmonton, Alberta